Service

Repair Manual

CC 2010 ➤ , Golf 2004 ➤ , Golf 2009 ➤ , Passat 2006 ➤ , Passat CC 2009 ➤

Automatic Transmission

Engine ID	BPY	CCTA	BGP	BGQ	CBTA	CBUA			

Edition 07.2012

Service Department. Technical Information

Service

List of Workshop Manual Repair GroupsList of Workshop Manual Repair GroupsList of Workshop Manual Repair Groups

Repair Group

00 - General, Technical Data
32 - Torque Converter
37 - Controls, Housing
38 - Gears, Hydraulic Controls
39 - Final Drive, Differential

Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.

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00 – General, Technical Data

1 General Information

⇒ “1.1 General Repair Information“, page 1

⇒ “1.2 Transmission Identification“, page 4

1.1 General Repair Information

Carefulness, cleanliness and the correct tools are required for transmission repairs to be successful. The usual basic safety precautions also, naturally apply when carrying out vehicle repairs.

A number of generally applicable instructions for individual repair operations, which are otherwise mentioned at various points in this repair manual are summarized here.

⇒ “1.1.1 Transmission“, page 1

⇒ “1.1.2 Torque Converter“, page 1

⇒ “1.1.3 Automatic Transmission Fluid“, page 1

⇒ “1.1.4 Transmission Control Module J217 with Fuzzy Logic“, page 2

⇒ “1.1.5 Control Modules“, page 2

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⇒ “1.1.7 Tools“, page 2

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⇒ “1.1.10 Bolts and Nuts“, page 3

⇒ “1.1.11 Electrical Components“, page 4

⇒ “1.1.12 Guided Fault Finding, Vehicle Diagnosis and Test Instruments“, page 4

1.1.1 Transmission

The “automatic transmission 09G“ has 6 hydraulically control forward gears. By passing the torque converter slip, 2nd, 3rd, 4th, 5th and 6th gears become mechanically driven gears if the lockup clutch is closed.

1.1.2 Torque Converter

The torque converter is equipped with a slip controlled torque converter lock up clutch. The lockup clutch closes depending on load and speed. The 2nd, 3rd, 4th, 5th and 6th gears can be mechanically driven (without slip).

1.1.3 Automatic Transmission Fluid

Use only the automatic transmission fluid listed as a replacement part in the Parts Catalog.

The fluid levels inside the transmission and the final drive are checked and filled at the same time.

1.1.4 Transmission Control Module J217 with Fuzzy Logic

Determining the driving situation and driving resistance dependent shift point occurs automatically.

Advantages:

- It is shifted depending on consumption
- Maximum engine output is always available
- Individual adaptation of shift points in all driving situations
- Gear shift points are infinitely variable

1.1.5 Control Modules

The installed locations of all vehicle control modules and other useful information can also be found in ⇒ Wiring diagrams, Troubleshooting & Component locations.

1.1.6 Information on the “09G Automatic Transmission“

For information in the 09G transmission, refer to the Self Study Program, Course Number 851503, 6-Speed Automatic Transmission 09G/09M, Design and Function.

1.1.7 Tools

A complete list of special tools and workshop equipment used in the repair manual can be found at the beginning of each procedure and at the end of each repair group.

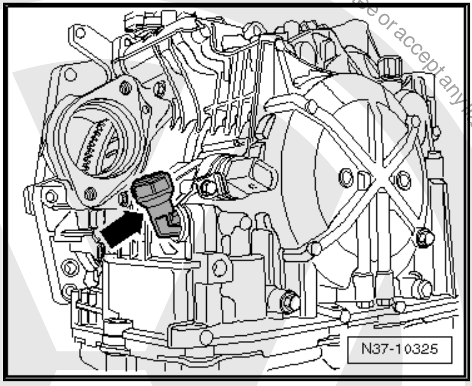
With small fasteners with a minimal tightening specification, uncertainties often exist. For these fasteners, the torque wrench - V.A.G 1783- can be used.

1.1.8 Transmission

- ♦ Do not run the engine and do not tow the vehicle if the transmission pan is removed or if there is no transmission fluid inside the transmission.
- ♦ Always clean the connection points and the areas around them first, and then loosen them.
- ♦ When installing the transmission, make sure the alignment sleeves are correctly seated between the engine and transmission.
- ♦ Place removed parts on a clean surface and cover them so that they do not get dirty. Use foil, paper or lint free cloths.
- ♦ Only install clean components: Remove the replacement parts from their packaging just prior to installing them.
- ♦ Carefully cover or seal unpacked components if repairs cannot be performed immediately.
- ♦ With the transmission removed, secure the torque converter so that it cannot fall out.

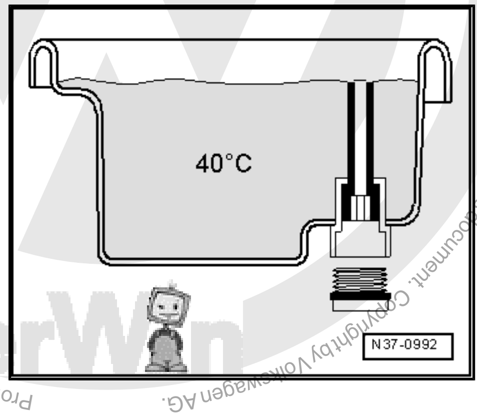
Transmissions With and Without a Filling Tube

Here, for example, is a filler tube -arrow- as it was installed in older transmissions. This tube has been omitted.



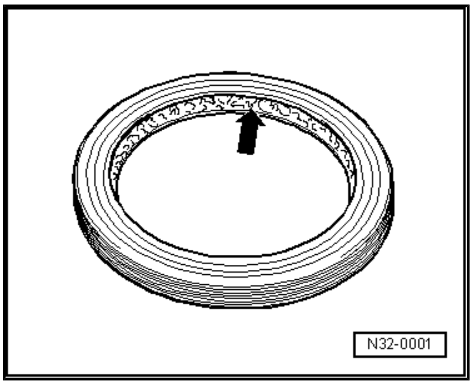
You also do not need the old filler hole with the red cap because the transmission fluid is drained and filled at the lower hole as necessary. The “height“ of this tube corresponds to the height of the transmission fluid level.

To drain the fluid, the tube is removed.



- After installing, check the transmission fluid level and fill as required. Refer to ⇒ “1.1 Transmission Fluid Level, Checking and Filling“, page 10 .
- Capacities, refer to ⇒ “2.1 Transmission and Final Drive Capacities “, page 5 .

1.1.9 Seals, Gaskets and O-rings



- O-rings, gaskets and seals must be replaced.
- Before installing the radial shaft seal, coat the sealing lips and the space between them with sealing grease for seal -G 052 128- .
- The open side of the seal faces the fluid.
- Check the transmission fluid level after installing.

Caution

Be cautious when dealing with transmission fluid. Dispose of drained fluid properly. Bear in mind that: One drop of transmission fluid can contaminate 1000 liters of drinking water.

1.1.10 Bolts and Nuts

- Loosen or tighten bolts and nuts for the covers or housings diagonally.
- The tightening specifications stated apply to non-lubricated nuts and bolts.
- Use a wire brush to clean the threads of the bolts that were installed using locking fluid. Install the bolts with liquid locking fluid -AMV 185 100 A1- .
- Use a thread tap to clean all threaded holes containing self locking bolts to remove any locking fluid residue. Otherwise the bolts could shear the next time they are removed.
- Always replace self-locking nuts and bolts.

1.1.11 Electrical Components

You have probably received a electrical shock at one time, when touching a metal item. The reason behind this is the electrostatic charge to the human body. This charge can damage the electrical components on the transmission and the selector mechanism.

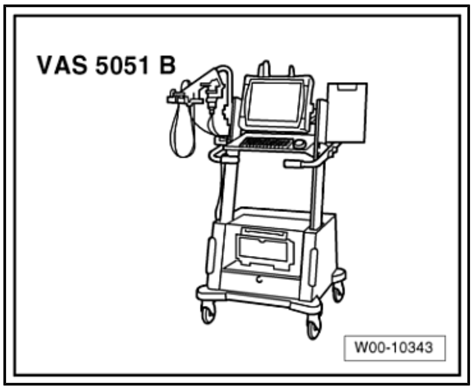
– Touch a grounded object, such as, a water pipe or a vehicle hoist, before working on electrical components. Do not touch the connector or »open« electronic components directly.

1.1.12 Guided Fault Finding, Vehicle Diagnosis and Test Instruments

Before beginning any service work on the transmission, determine the cause of the damage using “Guided Fault Finding“.

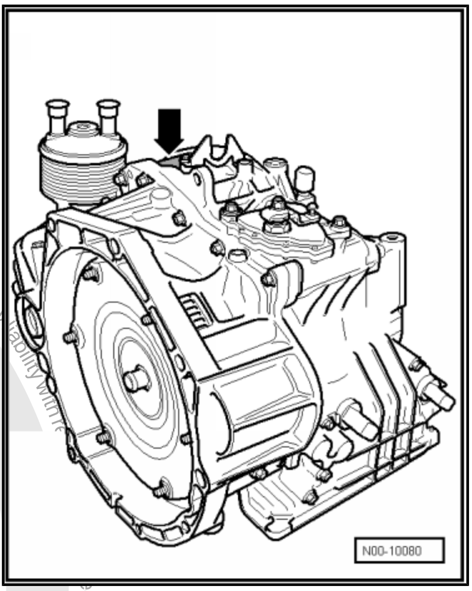
The `Guided Fault-finding` is performed using the vehicle diagnostic tester. Refer to ⇒ “2.1 Vehicle Diagnostic Tester, Connecting“, page 14 .

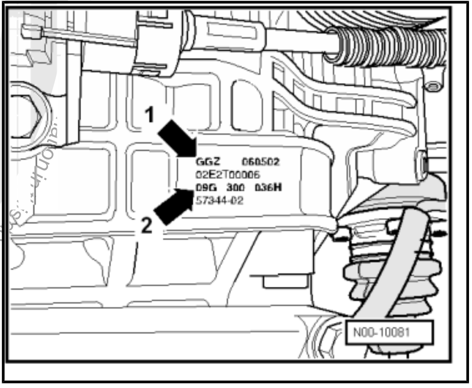
`Guided Functions` finds the transmission fluid temperature quickly. Refer to ⇒ “2.1 Vehicle Diagnostic Tester, Connecting“, page 14 .



1.2 Transmission Identification

Code letters -arrow-





Code letter -arrow 1-

“Automatic transmission 09G“ -arrow 2-

Example

GGZ	08	05	02
I	I	I	I
Identification codes	Day	Month	Production year -2002-

The transmission code is also listed on the vehicle data label.

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2 Specifications

⇒ “2.1 Transmission and Final Drive Capacities “, page 5

Rabbit (2006-2009)
⇒ “2.2 Engine Codes and Allocation“, page 5

Golf (from MY 2010)
⇒ “2.3 Engine Codes and Allocation“, page 5

Passat ⇒ “2.4 Engine Codes and Allocation“, page 5

CC ⇒ “2.5 Engine Codes and Allocation“, page 5

2.1 Transmission and Final Drive Capacities

Capacities	“6-Speed Automatic Transmission 09G“
Initial filling	Refer to Fluid Capacity Tables, Rep. Gr. 03
Change	Refer to Fluid Capacity Tables, Rep. Gr. 03
Lubricant	Automatic transmission fluid is available as a replacement part. For the correct part number, refer to the Parts Catalog.

2.2 Engine Codes and Allocation

If original equipment replacement parts are needed for a repair, always pay attention to the transmission codes.

“Automatic Transmission 09G“		
Identification codes	HFU, HRM and JUJ	KMV, KGL and MAN
Engine	2.5 L -110 kW	2.5 L -125 kW

2.3 Engine Codes and Allocation

If original equipment replacement parts are needed for a repair, always pay attention to the transmission codes.

“Automatic Transmission 09G“	
Identification codes	KGL and MAN
Engine	2.5 L -125 kW

2.4 Engine Codes and Allocation

If original equipment replacement parts are needed for a repair, always pay attention to the transmission codes.

“Automatic Transmission 09G“	
Identification codes	HRN, JUD, JZV and KGV
Engine	2.0 L - 147 kW (FSI)

2.5 Engine Codes and Allocation

If original equipment replacement parts are needed for a repair, always pay attention to the transmission codes.

“Automatic Transmission 09G“	
Identification codes	JZV and KGU
Engine	2.0 L - 147 kW (FSI)

32 – Torque Converter

1 General Information

⇒ “1.1 Torque Converter“, page 7

⇒ “1.2 Torque Converter Identification“, page 7

⇒ “1.3 Torque Converter, Draining“, page 7

1.1 Torque Converter

– Always secure the converter.

Unsecured converters could slide out if the transmission is tipped.

Always handle with care.

1.2 Torque Converter Identification

There are different torque converters. Use the code letters to designate them.

For the allocation of the torque converter to the transmission, refer to the Parts Catalog.

1.3 Torque Converter, Draining

Special tools and workshop equipment required

♦ Oil Extracting Device -V.A.G 1358 A-

♦ Oil Extracting Sensor -V.A.G 1358 A/1-

– Extract the transmission fluid from the torque converter using the oil extracting device -V.A.G 1358 A- and the oil extracting sensor -V.A.G 1358 A/1- .

2 Removal and Installation

⇒ “2.1 Torque Converter Seal“, page 8

⇒ “2.2 Torque Converter, Installing“, page 8

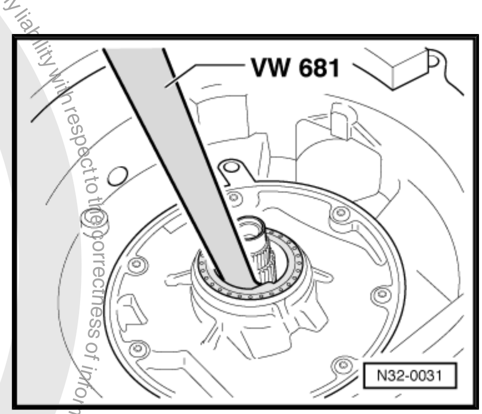
2.1 Torque Converter Seal

Special tools and workshop equipment required

- Thrust Piece -T10175-
- Extractor Lever -VW 681-

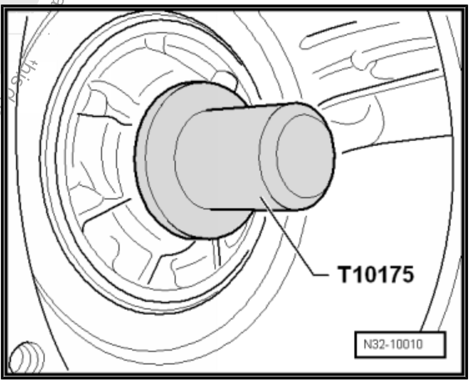
Removing

– Pry the seal out using the extractor lever -VW 681- .



Installing

– Install the seal until it is flush using the thrust piece -T10175- .



2.2 Torque Converter, Installing

– Press the torque converter hub through the seal as far as the first stop.

– Lightly press the torque converter toward the transmission and rotate it until the slots on the torque converter hub -arrow- engage in the drive lugs on the pump gear and the torque converter slides noticeably inward.

The converter is installed correctly if it is easy to turn is by hand and if it fits evenly in the transmission.

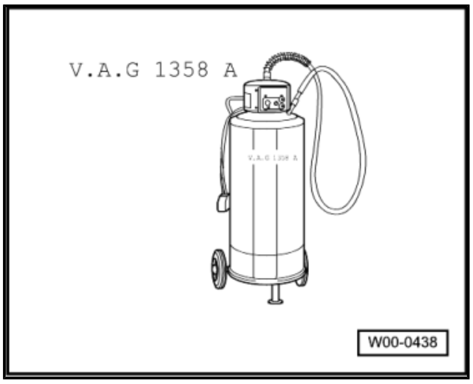
⚠ Caution

If the engine and transmission are connected with force when the converter is installed incorrectly, damage to the transmission and converter results.

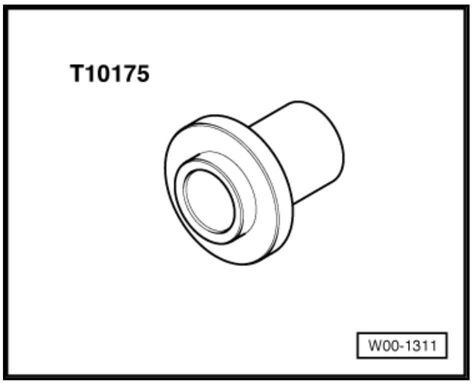
3 Special Tools

Special tools and workshop equipment required

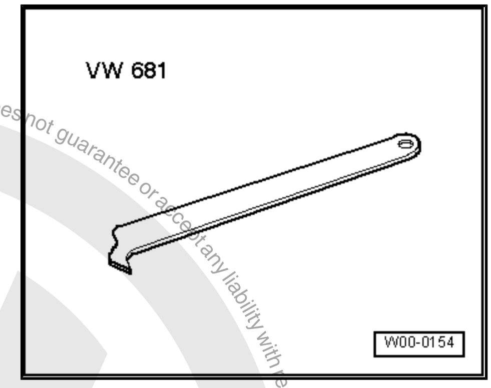
- Oil Extracting Sensor -V.A.G 1358 A/1-
- Oil Extracting Device -V.A.G 1358 A-


V.A.G 1358 A
W00-0438

- Thrust Piece -T10175-


T10175
W00-1311

- Extractor Lever -VW 681-


VW 681
W00-0154

37 – Controls, Housing

1 General Information

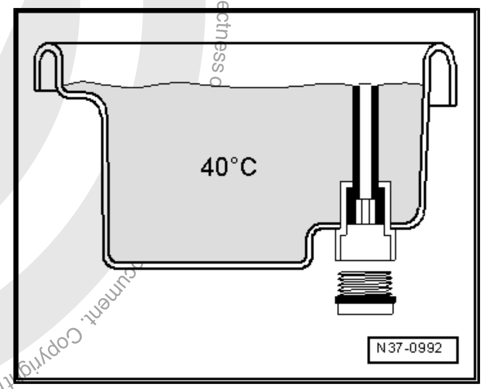
⇒ “1.1 Transmission Fluid Level, Checking and Filling“, page 10

⇒ “1.2 Transmission Fluid, Draining and Filling“, page 12

1.1 Transmission Fluid Level, Checking and Filling

Please observe the following notes:

- Regarding the repair manual, refer to ⇒ “1.1 General Repair Information“, page 1 .
- Regarding the transmission fluid, refer to ⇒ “1.1.3 Automatic Transmission Fluid“, page 1 .
- Regarding the filler tube, refer to ⇒ page 3 .
- It may be necessary to shorten the pipe on the adapter for oil filling -VAS 6262 A- ⇒ page 10 .

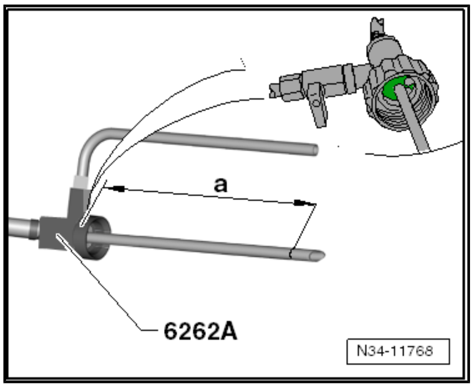


Special tools and workshop equipment required

- Torque Wrench (5-50 Nm) -V.A.G 1331-
- Used Oil Collecting and Extracting Device -V.A.G 1782-
- Vehicle Diagnosis, Testing and Information System -VAS 5051-
- Drip Tray for VAS 6100 -VAS 6208-
- Adapter for Oil Filling -VAS 6262 A-
- Adapter for Filling ATF Oil -VAS 6262/2-
- Pipe Cutter -VAS 6056/2-

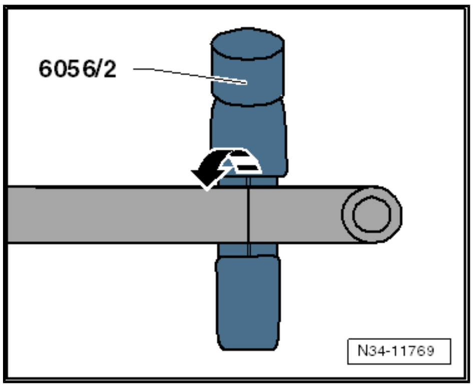
Shortening the pipe on the adapter for oil filling -VAS 6262 A- :

– Shorten the pipe to 210 mm -a-. This assures the pipe on the adapter for oil filling -VAS 6262 A- will not touch the bottom of some fluid containers.



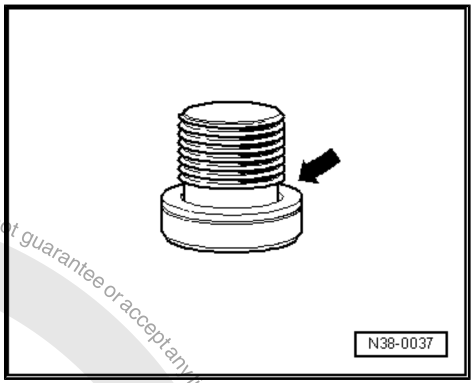
Note

Dimension -a- is measured starting from the green surface on the adapter for oil filling -VAS 6262 A- .



– Make a mark on the pipe at dimension -a-, and cut it using the pipe cutter -VAS 6056/2- .

Use the transmission fluid available as a replacement part. Refer to the Parts Catalog.



– When checking the transmission fluid level, always replace the seal -arrow- on the plug.

Checking

– Turn off the engine.

The transmission fluid temperature must not be more than approximately 30 °C (86 °F) at the start of the test.

- The transmission is not in emergency running mode, and the fluid temperature is not higher than 30 °C (86 °F).
- The vehicle is horizontal.
- The selector level is in the “P“ position.

– Connect the tester and move through the selections until it is ready for operation. Refer to ⇒ “2.1 Vehicle Diagnostic Tester, Connecting“, page 14 .

– Press the right button `Guided Functions`.

– Select the vehicle, the transmission and `check ATF level`.

– Press the → button.

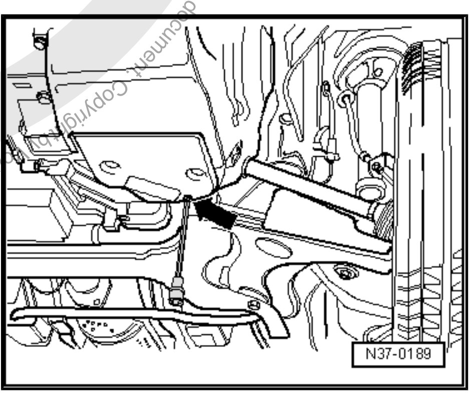
– Start the engine.

– Lift the vehicle.

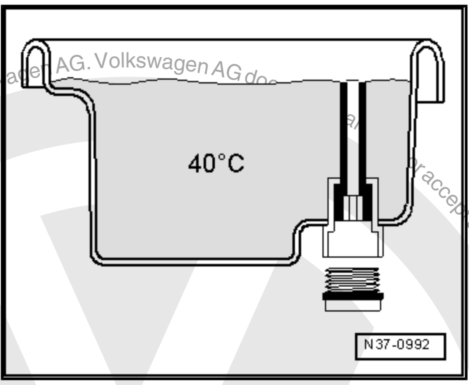
– Place a drip tray under the transmission.

– Press the → button.

If the test temperature is 35 to 45 °C (95 to 113 °F)



– Remove the plug from the oil pan.



The fluid flows out of the overflow tube.

If fluid continues to drip out of hole

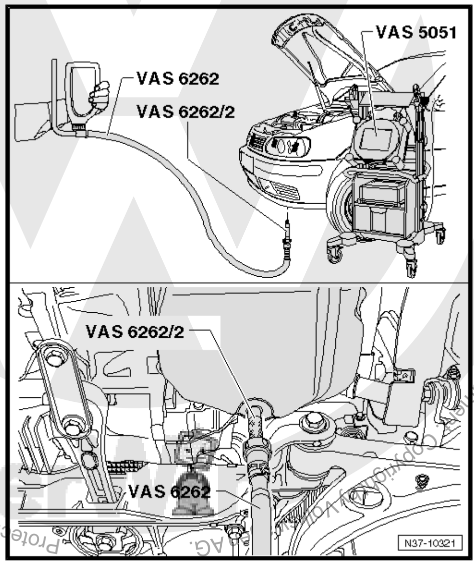
The fluid does not need to be topped off.

- Install and tighten the plug with a new seal to 27 Nm. The level check is now completed.

If no fluid drips out of the hole

- Fill with transmission fluid.

Filling



- Install the adapter for oil filling VAS 6291/2 -VAS 6262/2- into the oil pan hole, hand tight while the engine is running.
- Shake the bottles before opening.
- Read the information regarding the pipe before attaching the adapter for oil filling -VAS 6262 A- to the fluid container. Refer to ⇒ page 10 .
- Fill with 1 liter fluid.
- Connect the oil filler adapter -VAS 6262- to the quick release coupling and check:

If fluid lows out of the hole

The fluid does not need to be topped off.

- Allow the fluid to drain until it drips.
- Install and tighten the plug with a new seal to 27 Nm. The fluid level check is now completed.

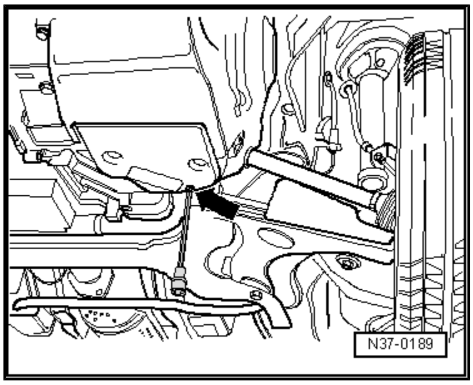
If the fluid does not drip

- Fill with another liter of fluid.

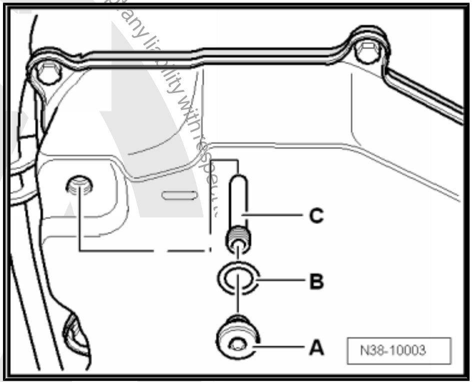
> ⚠ WARNING
>
> *Too little or too much transmission fluid will impair the transmission. If 2 liters are missing, you should check the transmission more closely. There is probably a larger leak.*

1.2 Transmission Fluid, Draining and Filling

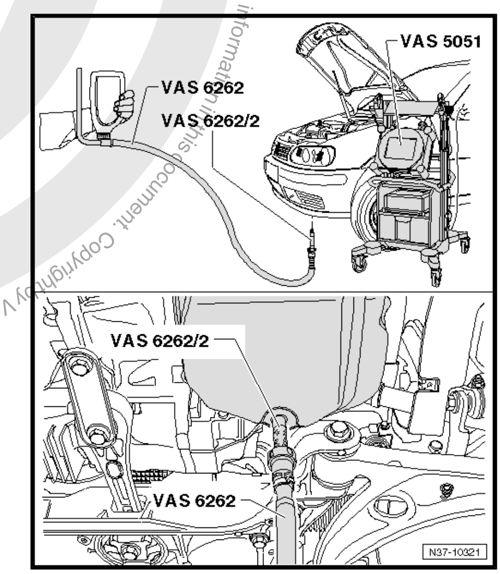
- Turn off the engine.
- Remove the plug from the oil pan -arrow-.



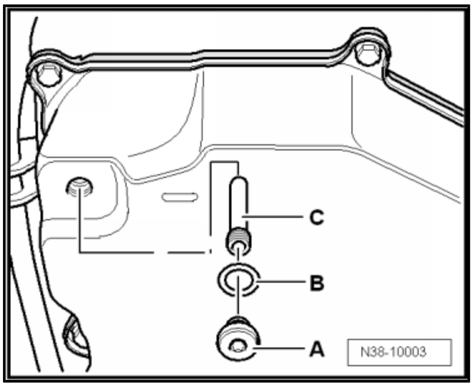
- Remove the overflow tube -C-.
- Always replace the seal -B-.
- Drain the transmission fluid.
- Install the overflow tube -C-. Refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .



- Install adapter for oil filling -VAS 6262/2- hand-tight.
- Shake the bottles before opening.
- Read the information regarding the pipe before attaching the adapter for oil filling -VAS 6262 A- to the fluid container. Refer to ⇒ page 10 .
- Fill with 3 liters of fluid through the filler tube. Refer to the Parts Catalog.



- Install and tighten the plug -A- with a new seal -B- by hand.
- Start the engine, shift through all selector lever positions, you must remain shifted in each position approximately 10 seconds.
- Check the fluid level and add if necessary. Refer to ⇒ “1.1 Transmission Fluid Level, Checking and Filling“, page 10 .



2 Description and Operation

⇒ “2.1 Vehicle Diagnostic Tester, Connecting“, page 14

⇒ “2.2 Multifunction Transmission Range Switch, Adjusting“, page 15

⇒ “2.3 Electrical and Electronic Components and Locations“, page 16

⇒ “2.4 Selector Lever, Manual Release“, page 21

⇒ “2.5 Selector Lever Cable, Adjusting“, page 21

⇒ “2.6 Selector Mechanism Overview, through 02.09“, page 22

⇒ “2.7 Selector Mechanism Overview, from 03.09“, page 24

Passat

⇒ “2.8 Transmission Fluid Lines, Cooler and Auxiliary Cooler Overview“, page 25

2.1 Vehicle Diagnostic Tester, Connecting

Volkswagen offers various testers, for example:

- Vehicle Diagnosis, Testing and Information System -VAS 5051-
- Vehicle Diagnosis, Testing and Information System -VAS 5051B-
- Tester -VAS 5051/11A-
- Vehicle Diagnosis and Service System -VAS 5052-
- Diagnosis System -VAS 5053-

The operation of these testers is described in the respective operating instructions.

The following description is based on the vehicle diagnosis, testing and information system -VAS 5051- .

Connecting

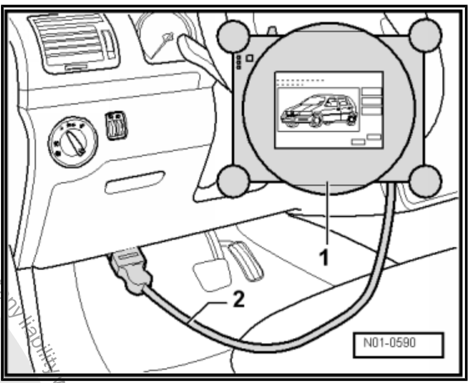
Special tools and workshop equipment required

- Vehicle Diagnosis, Testing and Information System -VAS 5051-

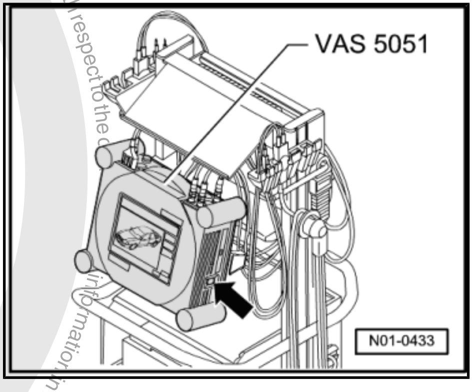
WARNING

- *During a test drive you must always secure testing and measuring equipment on the back seat.*
- *Only the passenger may use the equipment during the road test.*

– Connect the diagnostic cable -VAS 5051/1- -2- or -VAS 5051/3- to the diagnostic connection.



– Switch the tester on -arrow-.



The tester is ready for use when it is possible to select between the fields/buttons `Guided Functions` and `Guided Fault Finding` on the right side of the screen.

Depending on equipment and tester version, additional functions may be displayed, for example:

- `ElsaWin`
- `Test Instruments`
- `OBD`

The tester is now ready for operation.

– Turn on the ignition.

– Touch a field/button on the display to start the desired function.

2.2 Multifunction Transmission Range Switch, Adjusting

Special tools and workshop equipment required

- Setting Gauge -T10173-

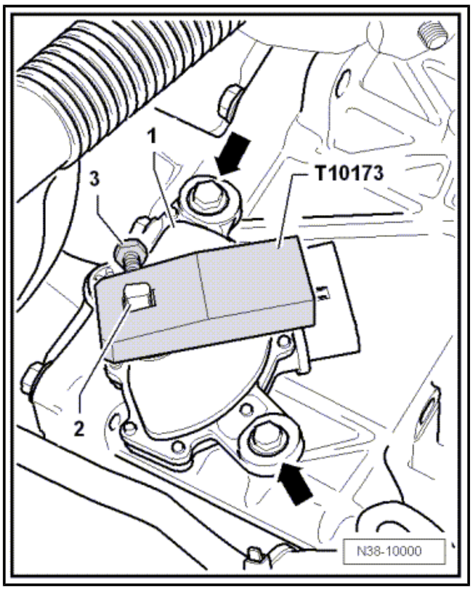
– Move the selector lever into the “N“ position.

– Do not bend the selector lever cable.

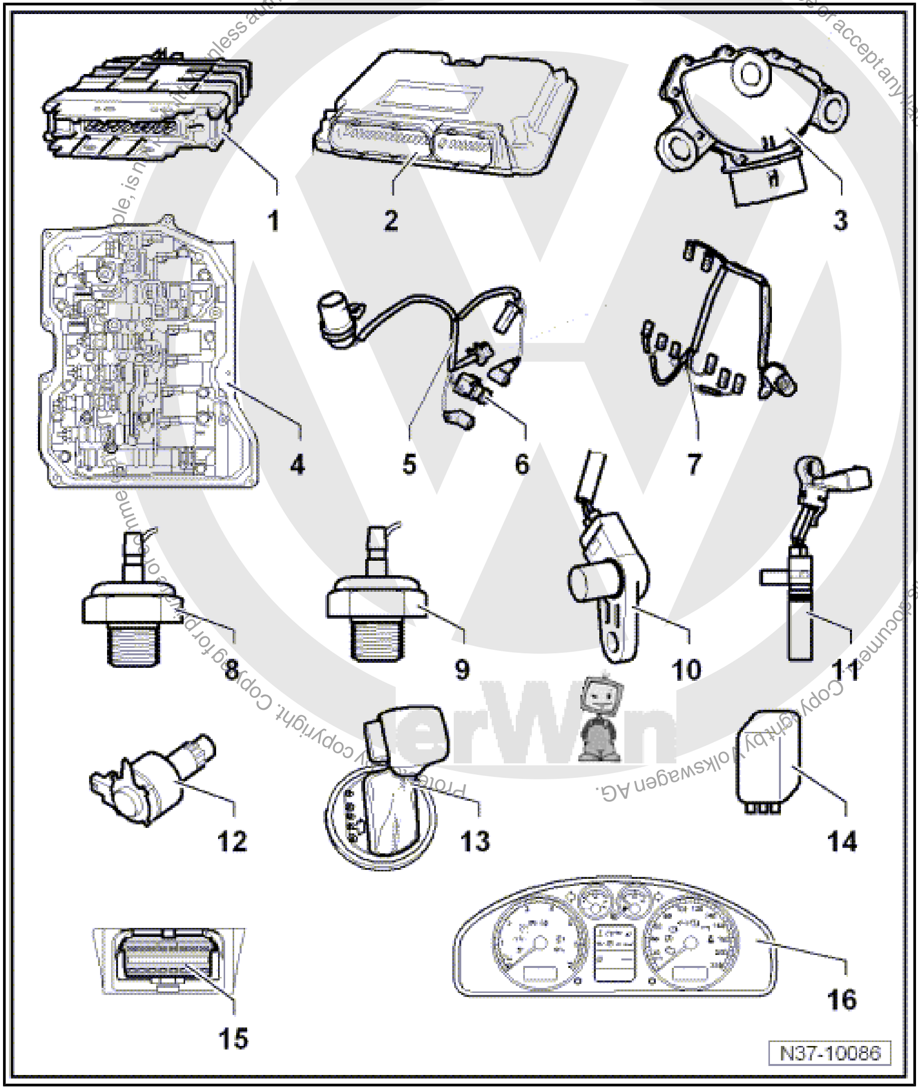
Adjustment Prerequisites

- The selector lever cable is disconnected from the selector shaft lever
- The selector shaft is in the “N“ position.
- The bolts for the multifunction transmission range switch have been loosened.
- The selector shaft lever is removed.

- Install the setting gauge -T10173- onto the selector shaft -2- and turn the multifunction switch -1- just until the setting gauge locks onto the tab on the multifunction switch connector.
- Use the bolt -3- to secure the setting gauge to the selector shaft -2-.
- Tighten the multifunction switch bolts -arrows- to 6 Nm.
- Remove the setting gauge.
- Further installation is performed in the reverse order.



2.3 Electrical and Electronic Components and Locations



1 - Transmission Control Module -J217-

- ☐ The control module sends and receives data from the Data bus.
- ☐ Installed location, removing and installing, refer to ⇒ Fig. ““Transmission Control Module““ , page 18 .
- ☐ Can be checked in “Guided Fault Finding“ using the vehicle diagnostic tester.

2 - Engine Control Module

- ☐ The control module sends and receives data from the Data bus.
- ☐ Removing and installing, refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 24 ; Removal and Installation .

3 - Multifunction Transmission Range Switch -F125-

- ☐ Installed location, refer to ⇒ Fig. ““Multifunction Transmission Range Switch““ , page 18 .
- ☐ Can be checked in “Guided Fault Finding“ using the vehicle diagnostic tester.
- ☐ Removing and installing, refer to ⇒ “5.1 Multifunction Transmission Range Switch F125“, page 40 .

- ☐ Adjusting, refer to ⇒ “2.2 Multifunction Transmission Range Switch, Adjusting“, page 15

4 - Valve Body

- ☐ Installed location, refer to ⇒ Fig. ““Valve Body““ , page 18 .
- ☐ The components can be checked in “Guided Fault Finding“ using the vehicle diagnostic tester.
- ☐ For the correct allocation, refer to the Parts Catalog.

5 - Sensor Wiring Harness

- ☐ With the transmission fluid temperature sensor.
- ☐ Installed location, refer to ⇒ Fig. ““Sensor Wiring Harness““ , page 19 .
- ☐ Removing and installing, refer to ⇒ “3.5 Solenoid Valve and Sensor Wiring Harness“, page 113 .
- ☐ For the correct allocation, refer to the Parts Catalog.

6 - Transmission Fluid Temperature Sensor -G93-

- ☐ Installed location, refer to ⇒ Fig. ““Sensor Wiring Harness““ , page 19 .
- ☐ Can be checked in “Guided Fault Finding“ using the vehicle diagnostic tester.

7 - Solenoid Valve Wiring Harness

- ☐ Installed location, refer to ⇒ Fig. ““Solenoid Valve Wiring Harness““ , page 19 .
- ☐ Removing and installing, refer to ⇒ “3.5 Solenoid Valve and Sensor Wiring Harness“, page 113 .
- ☐ For the correct allocation, refer to the Parts Catalog.

8 - Automatic Transmission Hydraulic Pressure Sensor 1 -G193-

- ☐ Not installed in all transmissions.
- ☐ For the correct allocation, refer to the Parts Catalog.
- ☐ Installed location, refer to ⇒ Fig. ““Automatic Transmission Hydraulic Pressure Sensor 1 and Automatic Transmission Hydraulic Pressure Sensor 2““ , page 19 .

9 - Automatic Transmission Hydraulic Pressure Sensor 2 -G194-

- ☐ Not installed in all transmissions.
- ☐ For the correct allocation, refer to the Parts Catalog.
- ☐ Installed location, refer to ⇒ Fig. ““Automatic Transmission Hydraulic Pressure Sensor 1 and Automatic Transmission Hydraulic Pressure Sensor 2““ , page 19 .

10 - Transmission Input Speed Sensor -G182-

- ☐ Removing and installing, refer to ⇒ “3.6 Transmission Input Speed Sensor G182“, page 114 .
- ☐ Can be checked in “Guided Fault Finding“ using the vehicle diagnostic tester.

11 - Transmission Output Speed Sensor -G195-

- ☐ Removing and installing, refer to ⇒ “3.7 Transmission Output Speed Sensor G195“, page 114 .
- ☐ Can be checked in “Guided Fault Finding“ using the vehicle diagnostic tester.

12 - Shift Lock Solenoid -N110-

- ☐ Installed location: The shift lock solenoid is located in the selector mechanism.
- ☐ Can be checked in “Guided Fault Finding“ using the vehicle diagnostic tester.

13 - Tiptronic Switch -F189-

- ☐ Installed location, refer to ⇒ Fig. ““Tiptronic Switch““ , page 20 .
- ☐ Can be checked in “Guided Fault Finding“ using the vehicle diagnostic tester.

14 - Terminal 50 Power Supply Relay -J682-

- ☐ Inside the engine compartment E-box. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.

15 - Diagnostic Connection

- ☐ Installed location, refer to ⇒ Fig. ““Diagnostic Connection““ , page 20 .

16 - Transmission Range Display -Y6-

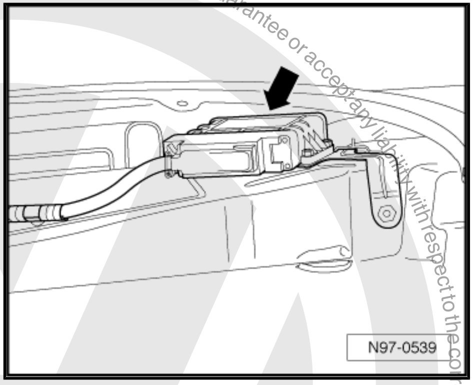
- ☐ Installed location, refer to ⇒ Fig. ““Transmission Range Display““ , page 20 .

❑ Removing and installing, refer to ⇒ Electrical Equipment; Rep. Gr. 90 ; Removal and Installation .

Transmission Control Module

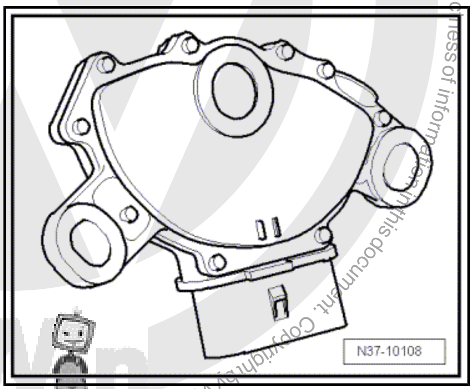
Installed location: The control module -arrow- is located in the left front wheel housing.

– The wheel housing liner must be removed for the removal and installation.



Multifunction Transmission Range Switch

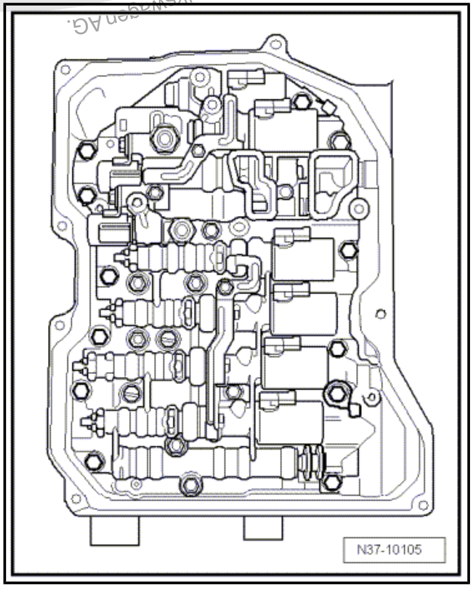
Installed location: The switch is located on the upper side of transmission.



Valve Body

Installed location: The valve body is bolted to the underside of the transmission housing and is covered by the transmission fluid pan.

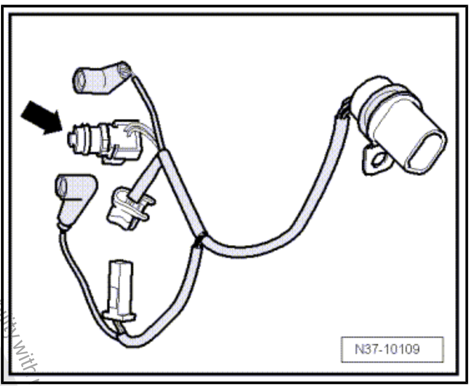
The solenoid valve 1 -N88- , solenoid valve 2 -N89- , solenoid valve 3 -N90- , solenoid valve 4 -N91- , solenoid valve 5 -N92- , solenoid valve 6 -N93- , solenoid valve 9 -N282- and solenoid valve 10 -N283- are secured to the valve body.



Sensor Wiring Harness

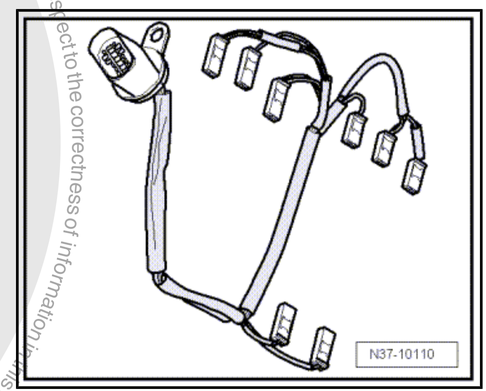
- With integrated transmission fluid temperature sensor -arrow-

Installed location: The wiring harness is secured to the valve body in the transmission.



Solenoid Valve Wiring Harness

Installed location: The wiring harness is secured to the valve body in the transmission.

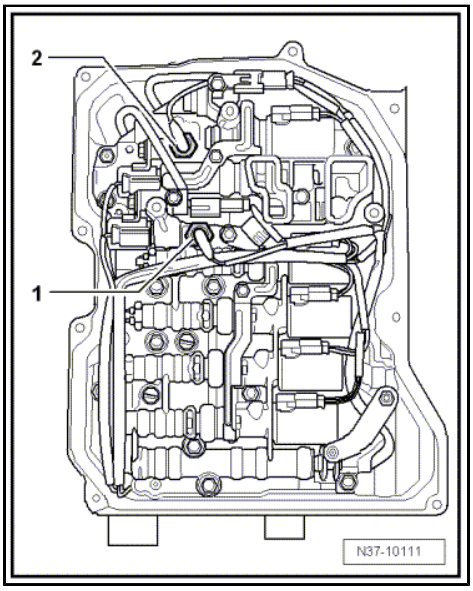


Automatic Transmission Hydraulic Pressure Sensor 1 and Automatic Transmission Hydraulic Pressure Sensor 2

These sensors are not installed in all transmissions.

Installed location:

The automatic transmission hydraulic pressure sensor 1 -1- and the automatic transmission hydraulic pressure sensor 2 are installed in the valve body.

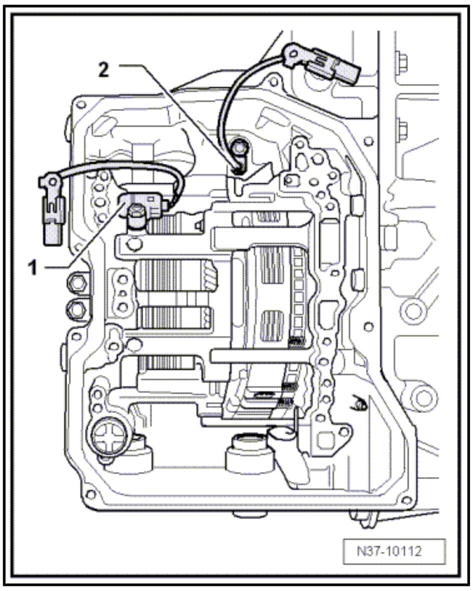


Transmission Input Speed Sensor and Transmission Output Speed Sensor

Installed location: inside the transmission housing above the valve body.

1 - Transmission input speed sensor

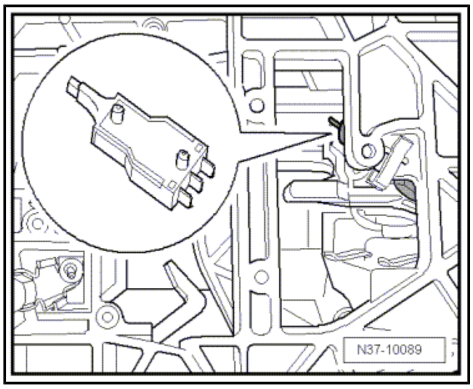
2 - Transmission output speed sensor



Tiptronic Switch

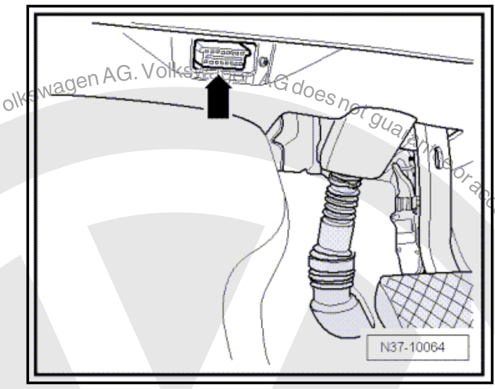
Installed location: The Tiptronic switch is integrated in the shift mechanism.

If the vehicle has a multifunction steering wheel, check the buttons on the steering wheel and the corresponding wire connections.



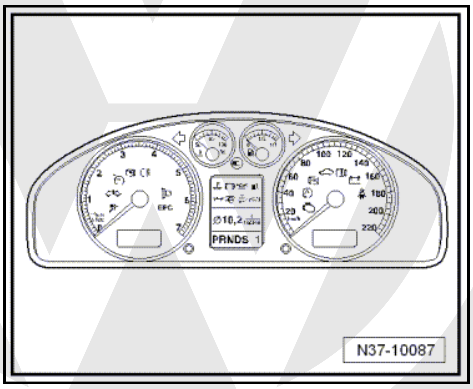
Diagnostic Connection

Installed location: The data link connector -arrow- is located under the driver side storage compartment on the left side.



Transmission Range Display

Installed location: Inside the instrument cluster



2.4 Selector Lever, Manual Release

Do not remove the handle.

– Press the brake or set the parking brake.

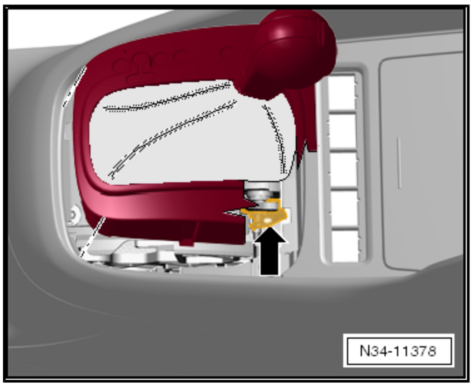
In case of an emergency.

– Unclip the shift cover and move it to the side.

Vehicles through 02.09

– Press the yellow plastic piece in, from the right to the left.

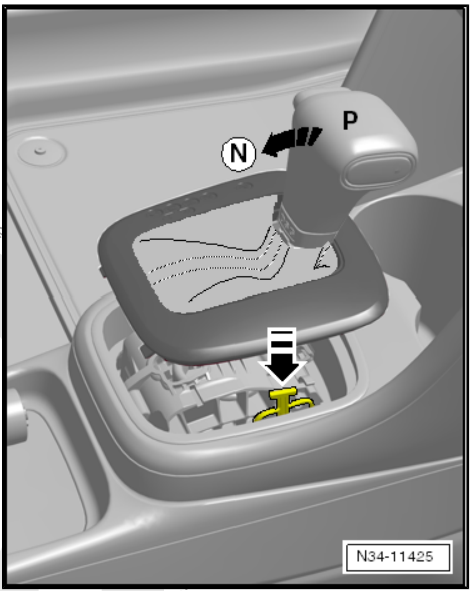
The lever can now be moved out of the “P“ position.



Vehicles from 03.09

– Push down on the yellow plastic piece.

The lever can now be moved out of the “P“ position.



2.5 Selector Lever Cable, Adjusting

Special tools and workshop equipment required

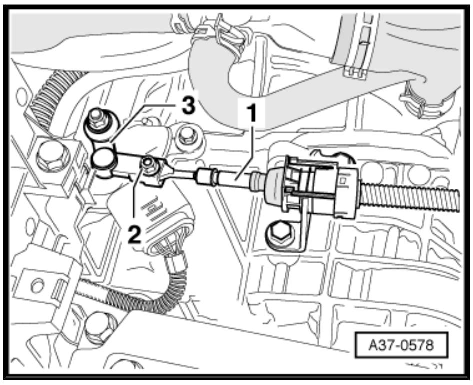
- Torque Wrench (5-50 Nm) -V.A.G 1331-

The selector lever cable must always be adjusted if:

- The selector lever cable was removed from the transmission.
- The engine and/or transmission were removed and installed.
- Parts of engine/transmission mounts were removed and installed.
- The cable itself or the selector mechanism was removed and installed.
- The engine/transmission positions change, for example, were installed free of tension.

Adjusting

– Move the selector lever into the “P“ position.



Loosen the adjustment bolt -2-.

– Move the selector shaft lever -3- into the “P“ position (push the lever to the rear).

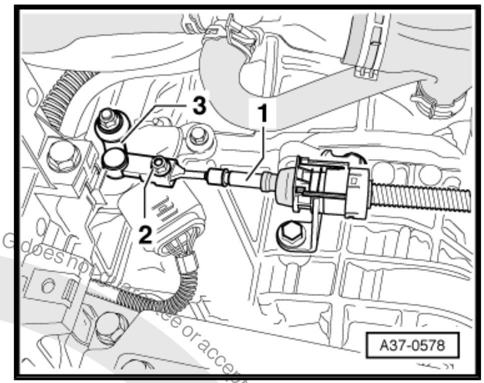
> ⚠ WARNING
>
> *Make sure the parking lock is latched.*

– From underneath the vehicle, rotate both front wheels in the same direction and at the same time until the parking lock audibly engages.

- The parking lock is engaged when it is not possible to rotate both front wheels in the same direction at the same time.

– Lightly tap button in the handle forward and backward and make sure to keep the handle in the “P“ position.

This locates the cable core in its optimal position.

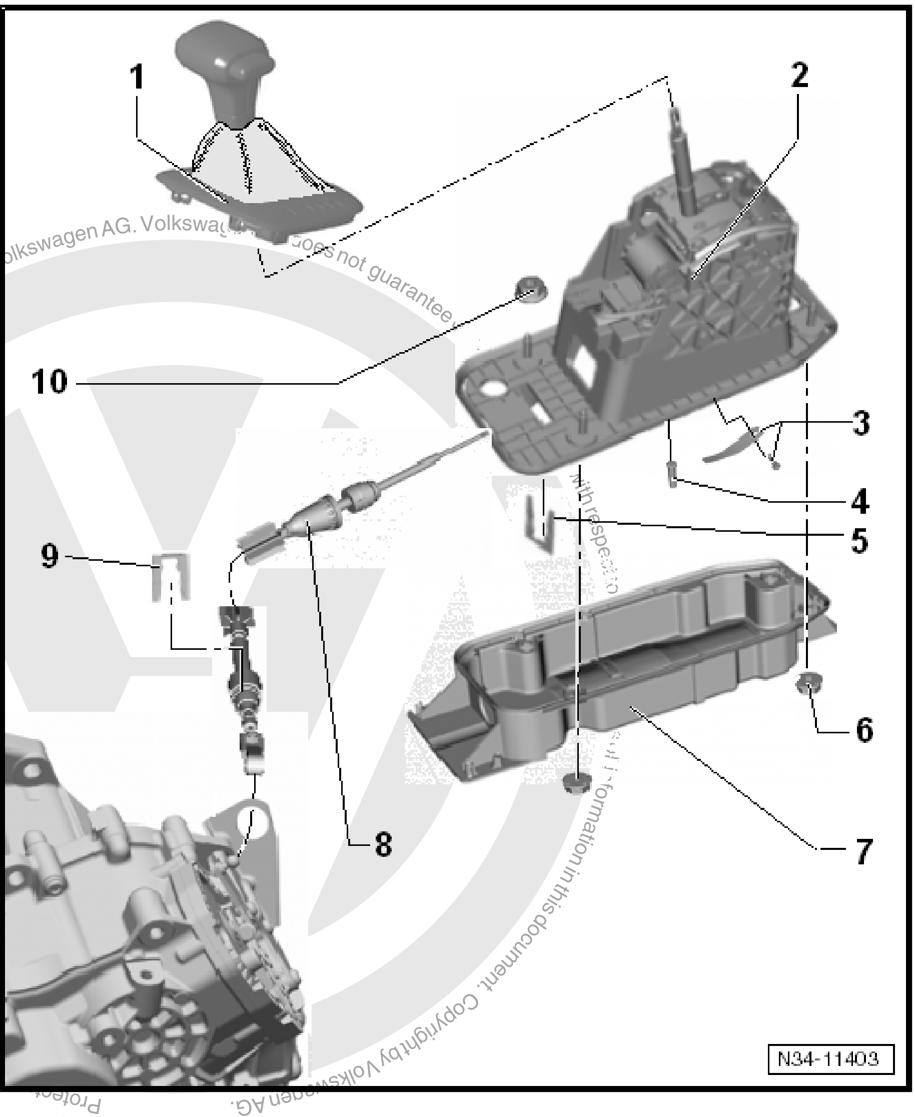


– Tighten the adjustment bolt -2- to 15 Nm.

This ends the adjustment.

2.6 Selector Mechanism Overview, through 02.09

> ⚠ WARNING
>
> *Move the selector lever into the “P“ position and set the parking brake before working with the engine running.*



1 - Selector Handle with Cover

- ☐ Do not remove the handle unnecessarily. For emergency release, only the cover needs the be removed. Refer to ⇒ “2.4 Selector Lever, Manual Release“, page 21 .
- ☐ Pull the button past its pressure point before removing the handle. Secure the button with a tie strap or tape. This prevents the button from being pushed back into the handle accidentally.
- ☐ If the button is pushed in:
- – Just before installing, pull the button out beyond the press point (sense this by touch).

2 - Selector Mechanism with Selector Lever.

- ☐ Removing and installing, refer to ⇒ “5.4 Selector Mechanism with Lever, through 02.09“, page 47 .

3 - Bolt with Spring

- ☐ 3 Nm

4 - Pin

- ☐ Removing, refer to ⇒ “5.5 Selector Lever Cable, through 02.09“, page 48 .
- ☐ Do not lubricate.

5 - Retainer

- ☐ Always replace after removing.

6 - Nut

- ☐ 9 Nm
- ☐ Quantity: 4

7 - Selector Housing

- ☐ With seal.

8 - Selector Lever Cable

- ☐ Do not grease the cable.
- ☐ Removing and installing, refer to ⇒ “5.5 Selector Lever Cable, through 02.09“, page 48 .
- ☐ Checking, refer to ⇒ “4.1 Selector Lever Cable, Checking“, page 37 .
- ☐ Adjusting, refer to ⇒ “2.5 Selector Lever Cable, Adjusting“, page 21 .

9 - Retainer

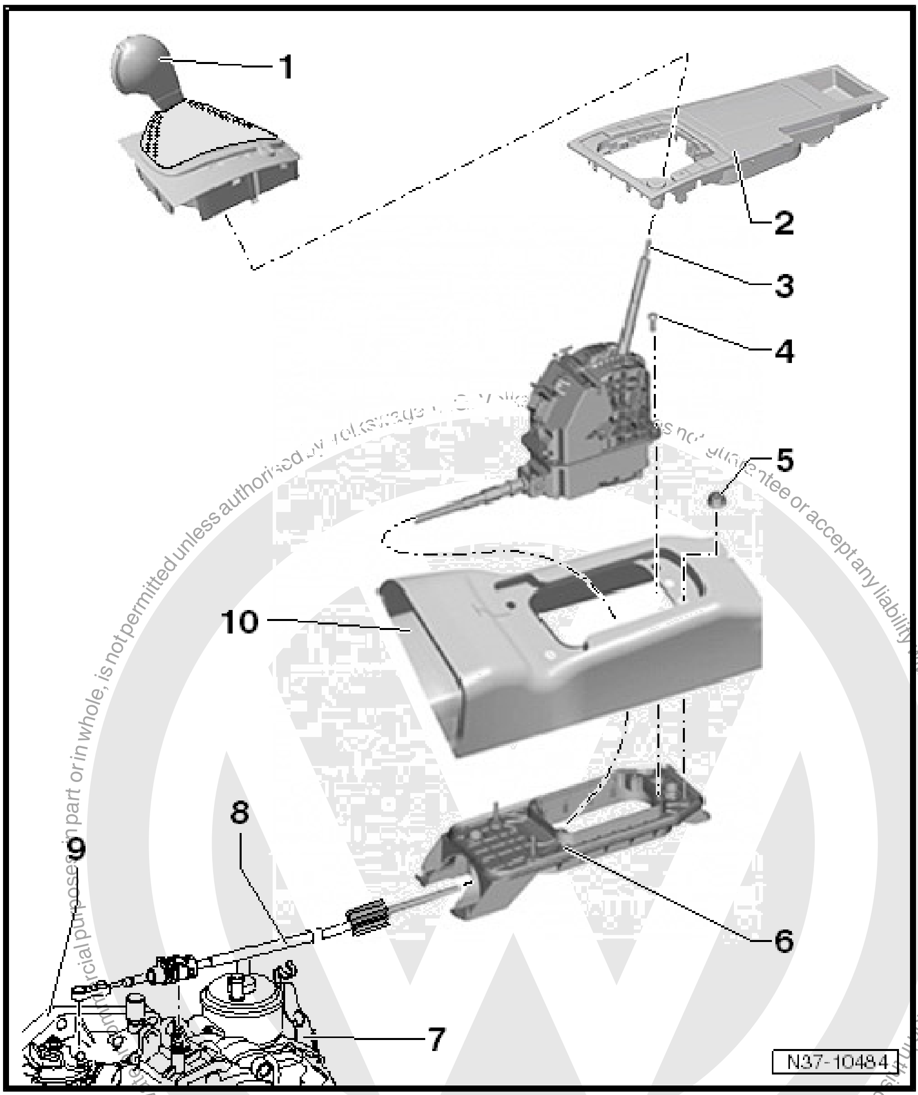
10 - Nut

- ☐ 8 Nm
- ☐ Quantity: 4

2.7 Selector Mechanism Overview, from 03.09

⚠ WARNING

Move the selector lever into the “P“ position and set the parking brake before working with the engine running.



1 - Selector Handle with Cover

- ☐ Do not remove the handle unnecessarily. Unclip only the cover for the emergency release. Refer to ⇒ “2.4 Selector Lever, Manual Release“, page 21 .
- ☐ Removing and installing, refer to ⇒ “5.2 Selector Lever Handle“, page 43 .

2 - Center Console Cover

- ☐ Is installed only occasionally.

3 - Selector Lever and Selector Mechanism with Selector Lever Cable

- ☐ With the shift lock solenoid.
- ☐ Do not grease the cable.
- ☐ Removing and installing, refer to ⇒ “5.7 Selector Mechanism without Selector Housing“, page 57 .
- ☐ Checking, refer to ⇒ “4.1 Selector Lever Cable, Checking“, page 37 .
- ☐ Adjusting, refer to ⇒ “2.5 Selector Lever Cable, Adjusting“, page 21 .

4 - Bolt

- ☐ 8 Nm

5 - Nut

- ☐ 8 Nm
- ☐ Quantity: 4

6 - Selector Housing

7 - Retainer

- ☐ Always replace after removing.

8 - Selector Lever Cable

- ☐ Can only be replaced together with the selector mechanism. Refer to ⇒ “5.4 Selector Mechanism with Lever, through 02.09“, page 47 .

9 - Transmission

10 - Tunnel/Body

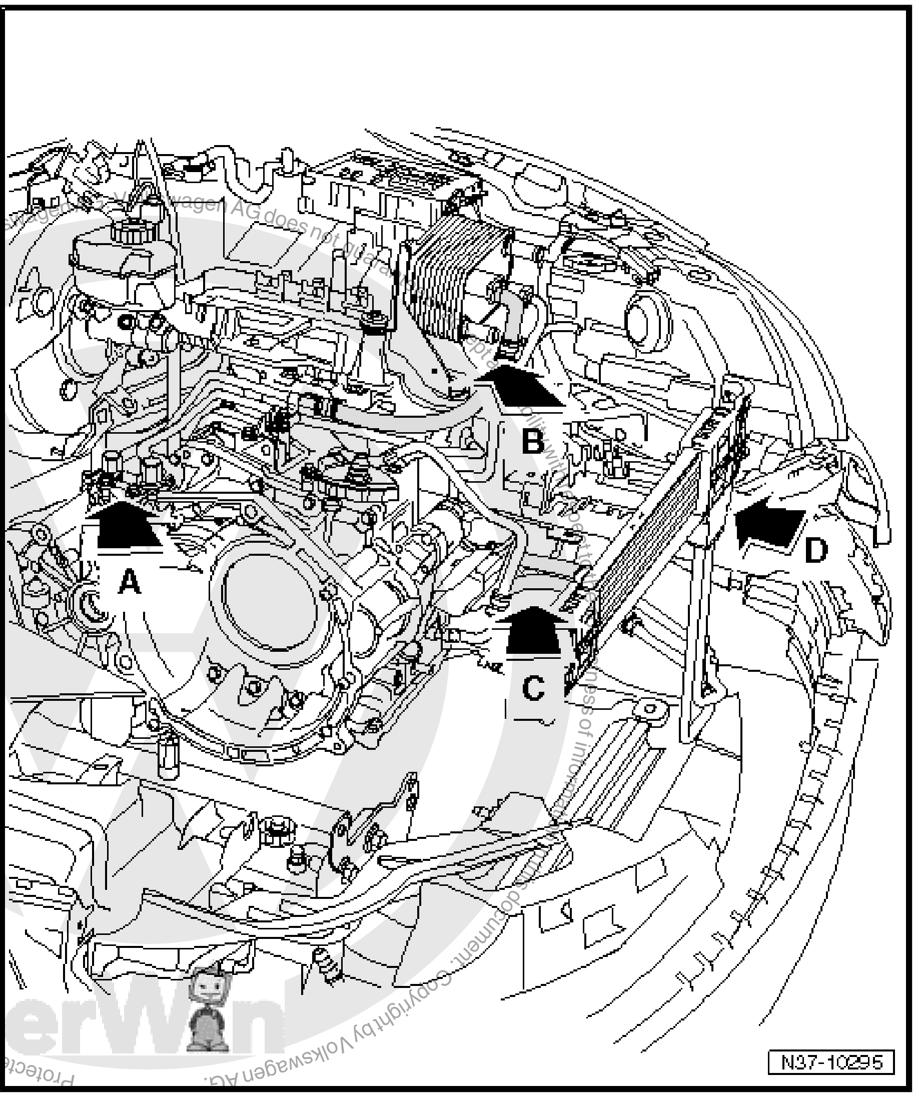
2.8 Transmission Fluid Lines, Cooler and Auxiliary Cooler Overview

A - ⇒ “2.8.1 Transmission Fluid Lines to Transmission“, page 26

B - ⇒ “2.8.2 External Transmission Fluid Cooler“, page 27

C - ⇒ “2.8.3 Transmission Fluid Lines“, page 28

D - ⇒ “2.8.4 Auxiliary Transmission Fluid Cooler“, page 29



2.8.1 Transmission Fluid Lines to Transmission

1 - Transmission Fluid Line

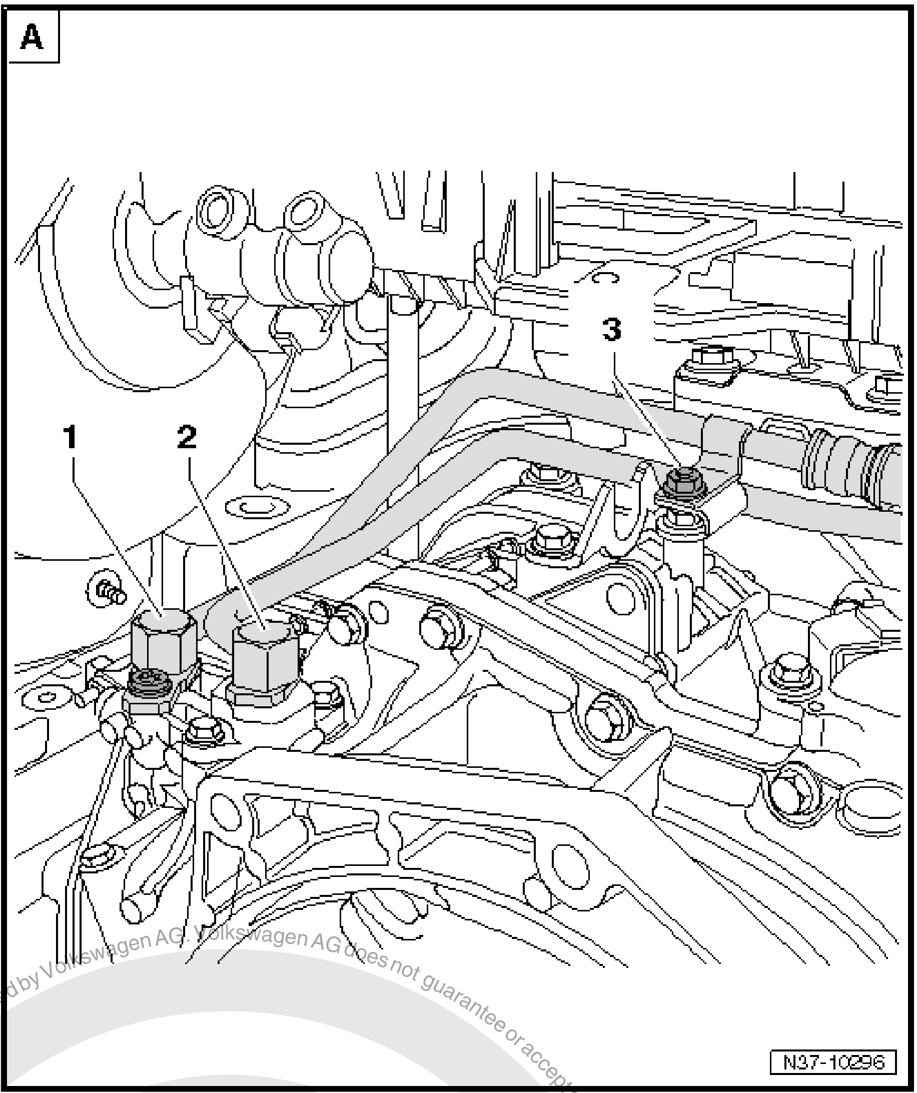
- ❑ 20 Nm
- ❑ Always replace the seal.

2 - Transmission Fluid Line

- ❑ 20 Nm
- ❑ Always replace the seal.

3 - Nut

- ❑ 9 Nm



2.8.2 External Transmission Fluid Cooler

1 - Bolt
- ❑ 8 Nm

2 - Nut
- ❑ 9 Nm

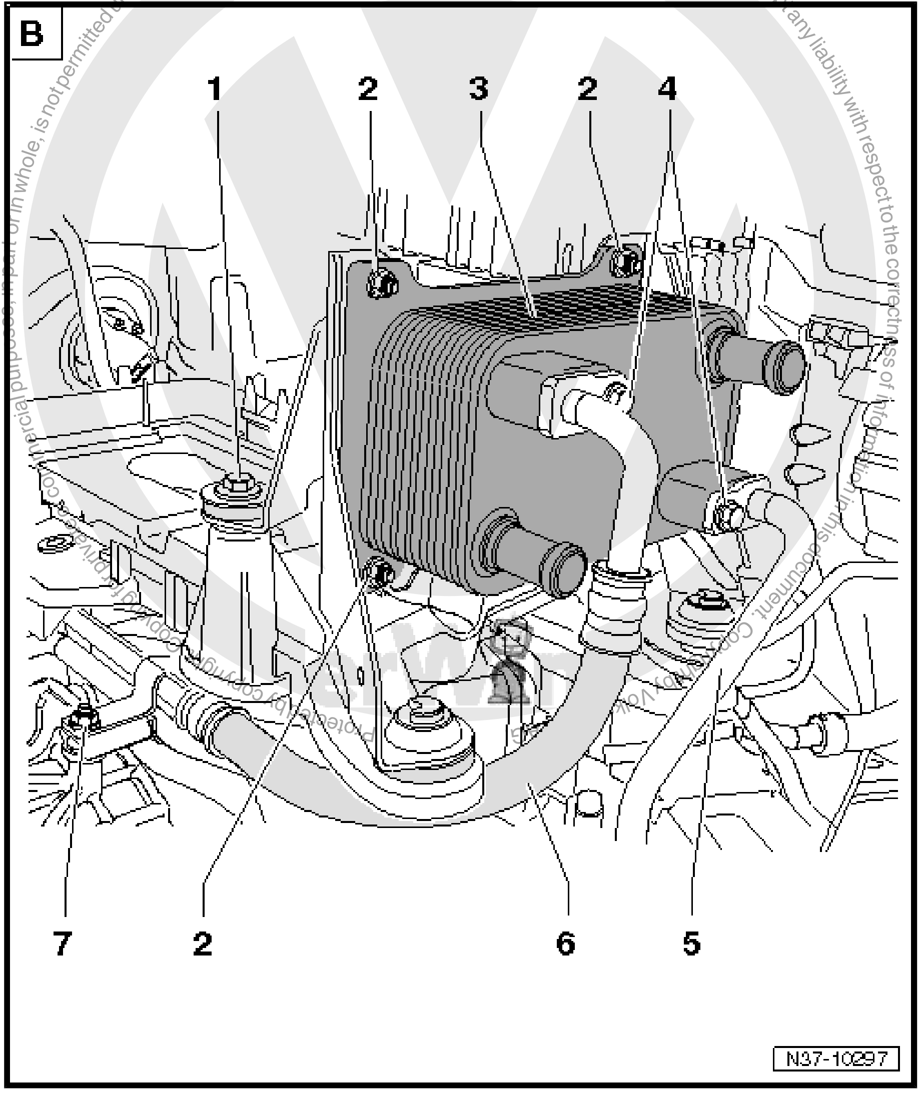
3 - External Transmission Fluid Cooler

4 - Bolt
- ❑ 9 Nm

5 - Transmission Fluid Line
- ❑ Supply line.
- ❑ Always replace the seal.

6 - Transmission Fluid Line
- ❑ Return line.
- ❑ Always replace the seal.

7 - Nut
- ❑ 9 Nm

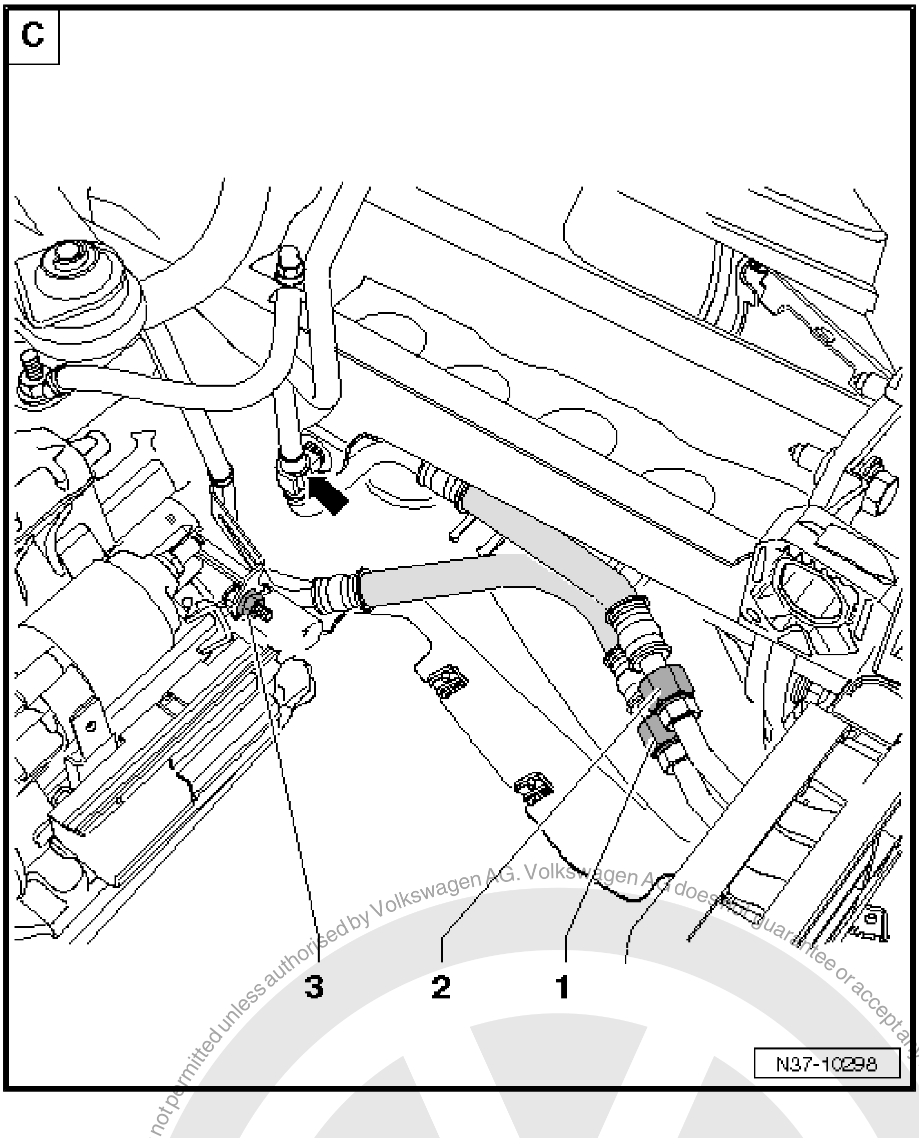


2.8.3 Transmission Fluid Lines

1 - Transmission Fluid Line
- ❑ 25 Nm.
- ❑ Return line from the auxiliary cooler.

2 - Transmission Fluid Line
- ❑ 25 Nm.
- ❑ Supply line for the auxiliary cooler.

3 - Nut
- ❑ 9 Nm



2.8.4 Auxiliary Transmission Fluid Cooler

1 - Transmission Fluid Auxiliary Cooler

- ☐ Remove when installing and removing the front bumper cover. Refer to ⇒ Body Exterior; Rep. Gr. 63 ; Description and Operation .

2 - Bolt

- ☐ 5 Nm

3 - Bolt

- ☐ 9 Nm

4 - Transmission Fluid Line

- ☐ Return line.
- ☐ Always replace the seal.

5 - Transmission Fluid Line

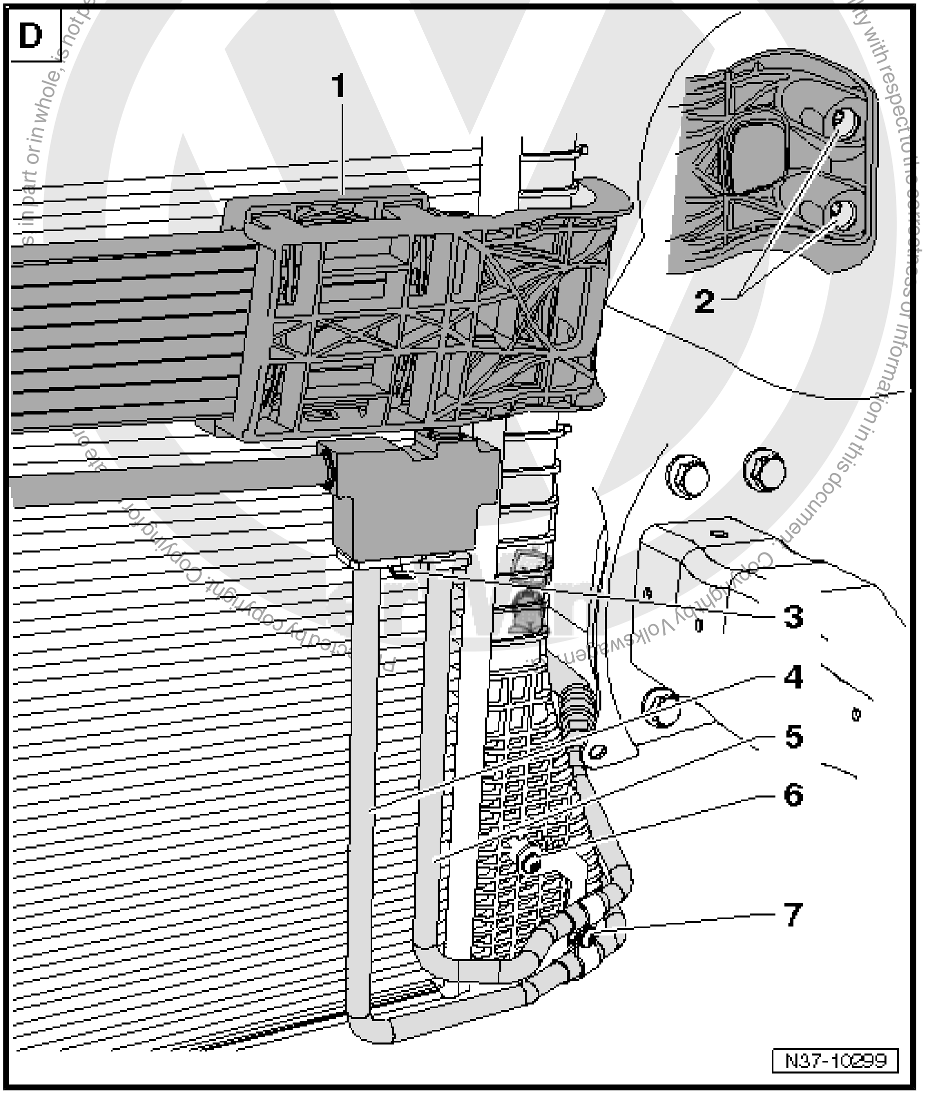
- ☐ Supply line.
- ☐ Always replace the seal.

6 - Bolt

- ☐ 5 Nm

7 - Bolt

- ☐ 9 Nm



3 Specifications

⇒ “3.1 Fastener Tightening Specifications“, page 30

Rabbit (2006-2009)
⇒ “3.2 Engine to Transmission Tightening Specifications“, page 31

Passat
⇒ “3.3 Engine to Transmission Tightening Specifications“, page 32

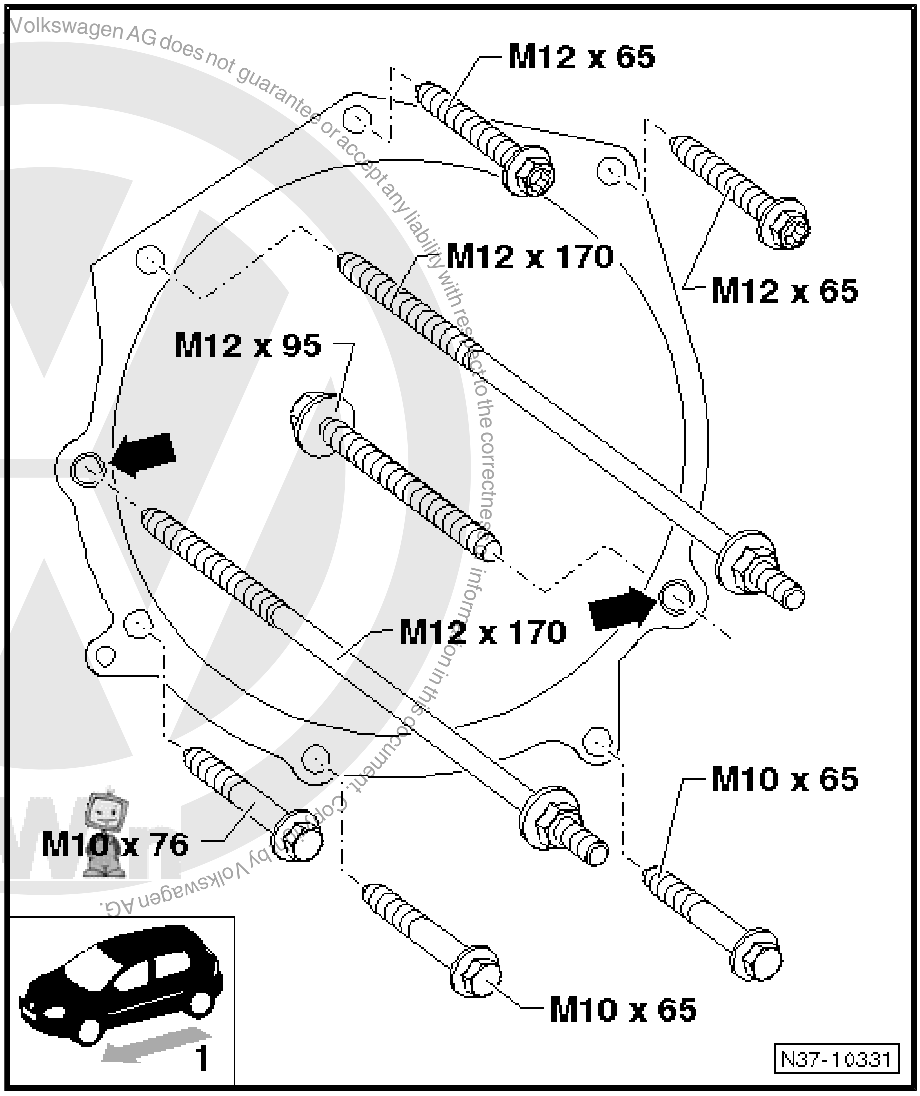
CC
⇒ “3.4 Engine to Transmission Tightening Specifications“, page 33

Golf (from MY 2010)
⇒ “3.5 Engine to Transmission Tightening Specifications“, page 35

3.1 Fastener Tightening Specifications

Component	Fastener Size	Nm
Inspection Plug to Transmission Oil Pan	-	27
Multifunction Transmission Range Switch to Shift Rod Nut	-	7
Multifunction Transmission Range Switch to Transmission Bolt	-	6
Selector Lever to Selector Shaft Nut	-	13
Transmission Mount Bracket to Transmission Bolt	-	40 + 90°
Transmission Mount to Transmission Mount Bracket Bolt	-	60 + 90°
-Transmission Fluid Cooler and Auxiliary Cooler (Passat only)-		
Transmission Fluid Cooler Bracket to Transmission Bolt	-	8
Transmission Fluid Cooler to Bracket Nut	-	9
Transmission Fluid Line to Transmission Fluid Cooler Bolt	-	9
Transmission Fluid Line Bracket to Transmission Nut	-	9
Transmission Fluid Line to Transmission Fitting	-	20
Transmission Fluid Line Return/Supply Line Fitting to/from Auxiliary Cooler	-	25
Transmission Fluid Return Line Bracket to Radiator Bolt	-	9
Transmission Fluid Supply Line Bracket to Radiator Bolt	-	5
Auxiliary Transmission Fluid Cooler Bolt	-	5
Auxiliary Transmission Fluid Line to Auxiliary Transmission Fluid Cooler Bolt	-	9
-Selector Mechanism, through 02.09-		
Bolt with Spring	-	3
Selector Housing to Body Nut	-	9
Selector Lever Cable Adjustment Bolt	-	15
Shift Mechanism to Body Nut	-	8
-Selector Mechanism, from 03.09-		
Selector Housing to Body Nut	-	8
Selector Lever Cable Adjustment Bolt	-	15
Selector Lever and Selector Mechanism with Selector Lever Cable to Body Bolt	-	8

3.2 Engine to Transmission Tightening Specifications


M12 x 65
M12 x 65
M12 x 170
M12 x 95
M12 x 170
M10 x 65
M10 x 76
M10 x 65
1
N37-10331

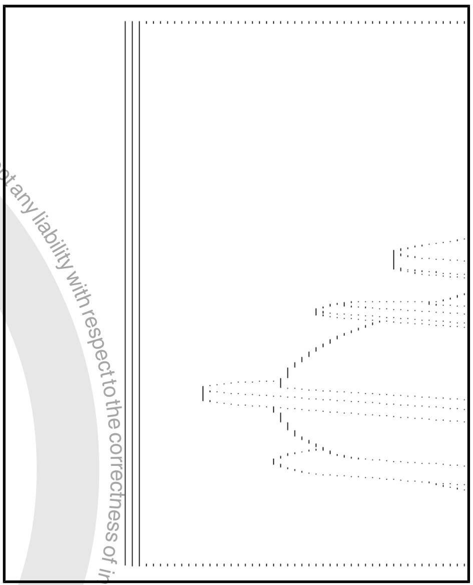
1 - Driving Direction

- Drive Plate to Torque Converter
  - ❑ 60 Nm.
  - ❑ Quantity: 6, remove and install using the socket SW15 -V/175- .
- M12 Bolts
  - ❑ 80 Nm.
  - ❑ 65 Nm, if using the insert tool 18 mm -T10179- .
- M10 Bolts
  - ❑ 40 Nm.
  - ❑ The bolts are located in the lower flange.

Arrows - for the Alignment Sleeves inside the Engine

– Make sure that the bracket does not touch the transmission fluid cooler.

Nuts: 8 Nm



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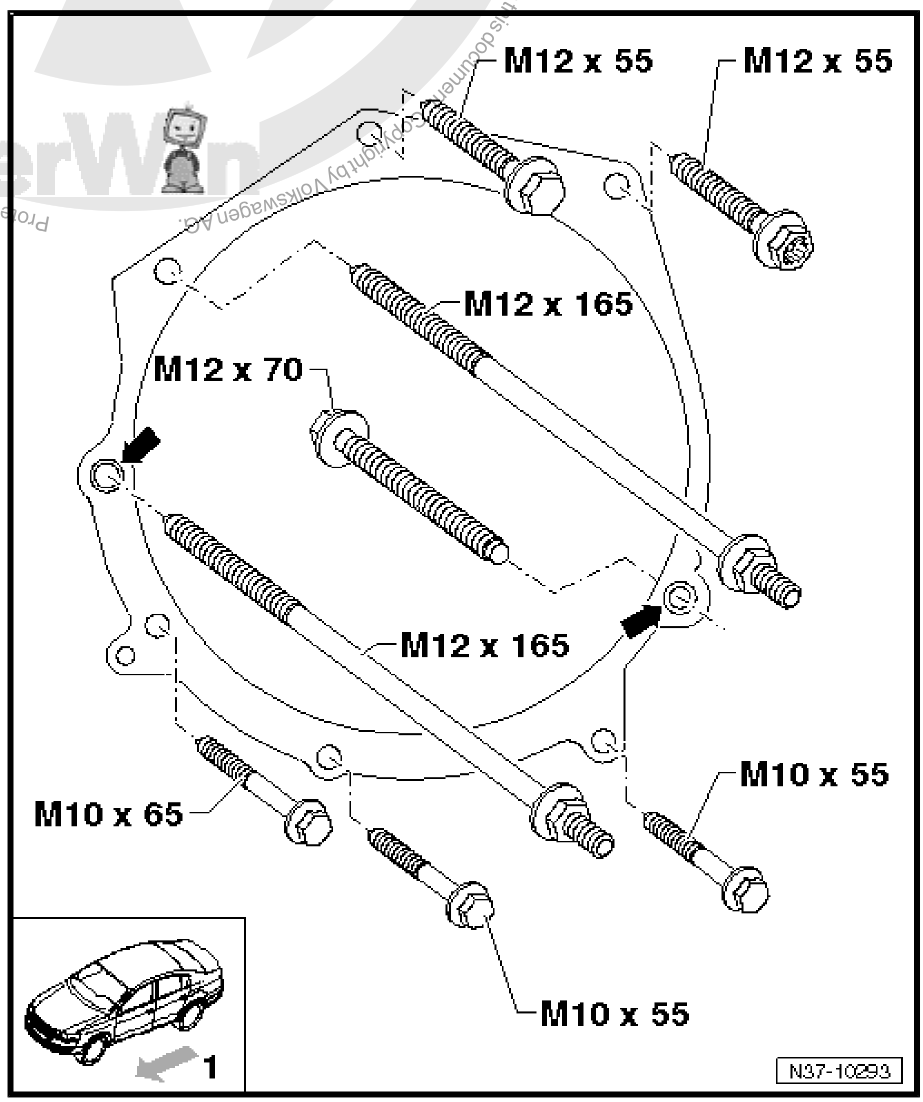
3.3 Engine to Transmission Tightening Specifications

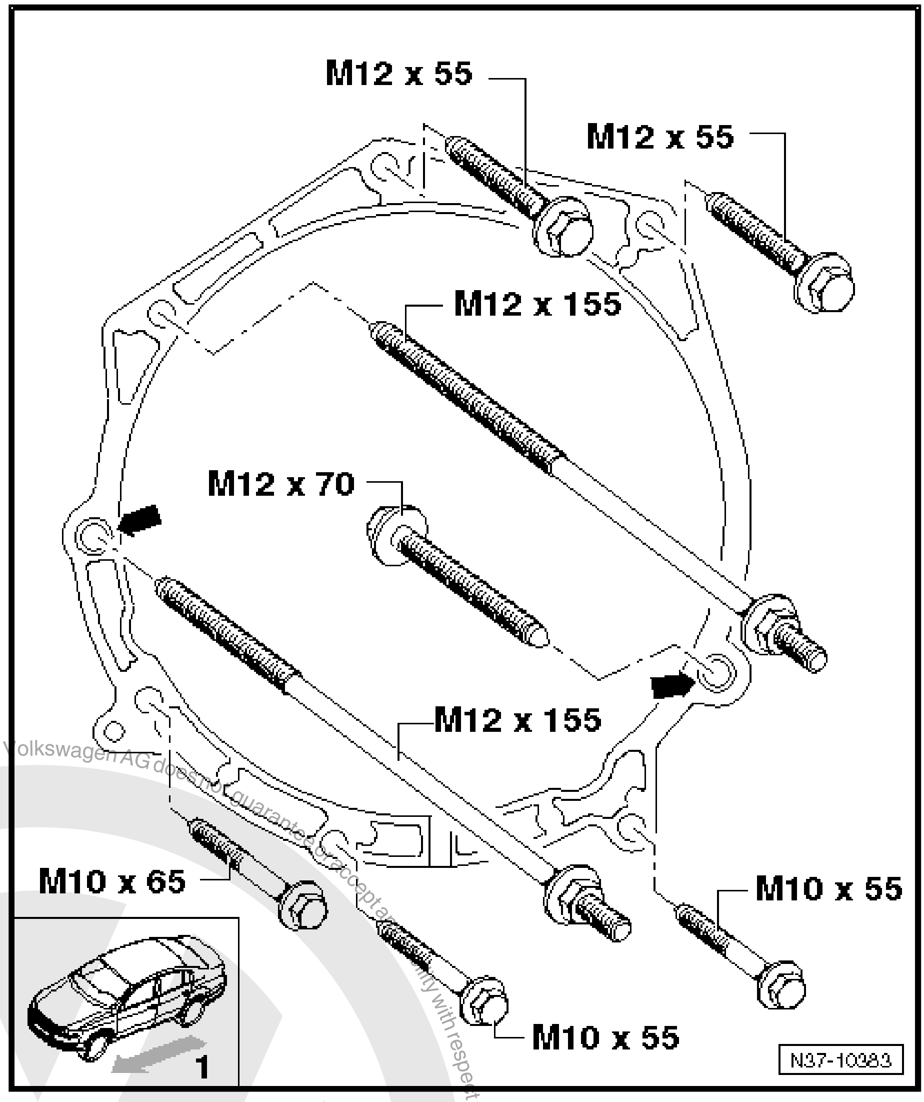
1 - Driving Direction

- Drive Plate to Torque Converter
  - ☐ 60 Nm.
  - ☐ Quantity: 6, remove and install using the socket SW15 -V/175-
- M12 Bolts
  - ☐ 80 Nm.
  - ☐ 65 Nm, if using the insert tool 18 mm -T10179- .
- M10 Bolts
  - ☐ 40 Nm.
  - ☐ The bolts are located in the lower flange.

Arrows - for the Alignment Sleeves Inside the Engine



3.4 Engine to Transmission Tightening Specifications



1 - Driving Direction

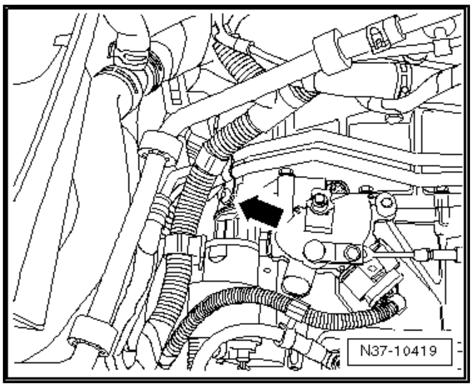
- Drive Plate to Torque Converter
  - ☐ 60 Nm.
  - ☐ Quantity: 6, remove and install using the socket SW!5 -V/175- .
- M12 Bolts
  - ☐ 80 Nm.
  - ☐ 65 Nm, if using the insert tool 18 mm -T10179- .
- M10 Bolts
  - ☐ 40 Nm.
  - ☐ The bolts are located in the lower flange.

Arrows - for the Alignment Sleeves Inside the Engine

Additional Tightening Specifications

Component	Tightening Specifications
Transmission bracket to the transmission (four M10 bolts)	40 Nm + 90°
Transmission bracket to the transmission mount (two M12 bolts)	60 Nm + 90°
Transmission fluid pipe brackets to the transmission, see ⇒ Fig. ““Transmission Fluid Pipe Brackets to the Transmission““ , page 34 .	9 Nm
Transmission fluid pipes to the cooler, see ⇒ Fig. ““Transmission Fluid Pipes to the Cooler““ , page 34 .	25 Nm
Transmission fluid pipes to the transmission pay attention to the length of the bolts, see ⇒ Fig. ““Transmission Fluid Pipes to the Transmission““ , page 34 .	25 Nm

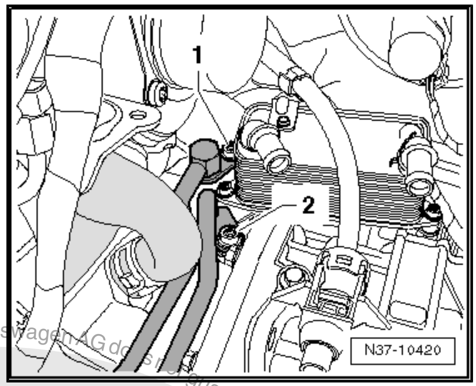
Transmission Fluid Pipe Brackets to the Transmission



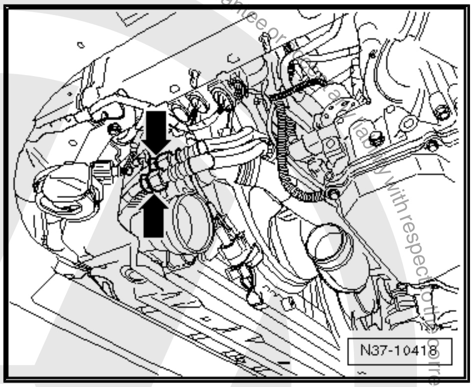
Transmission Fluid Pipes to the Transmission

Bolt -1- = M8 x 45

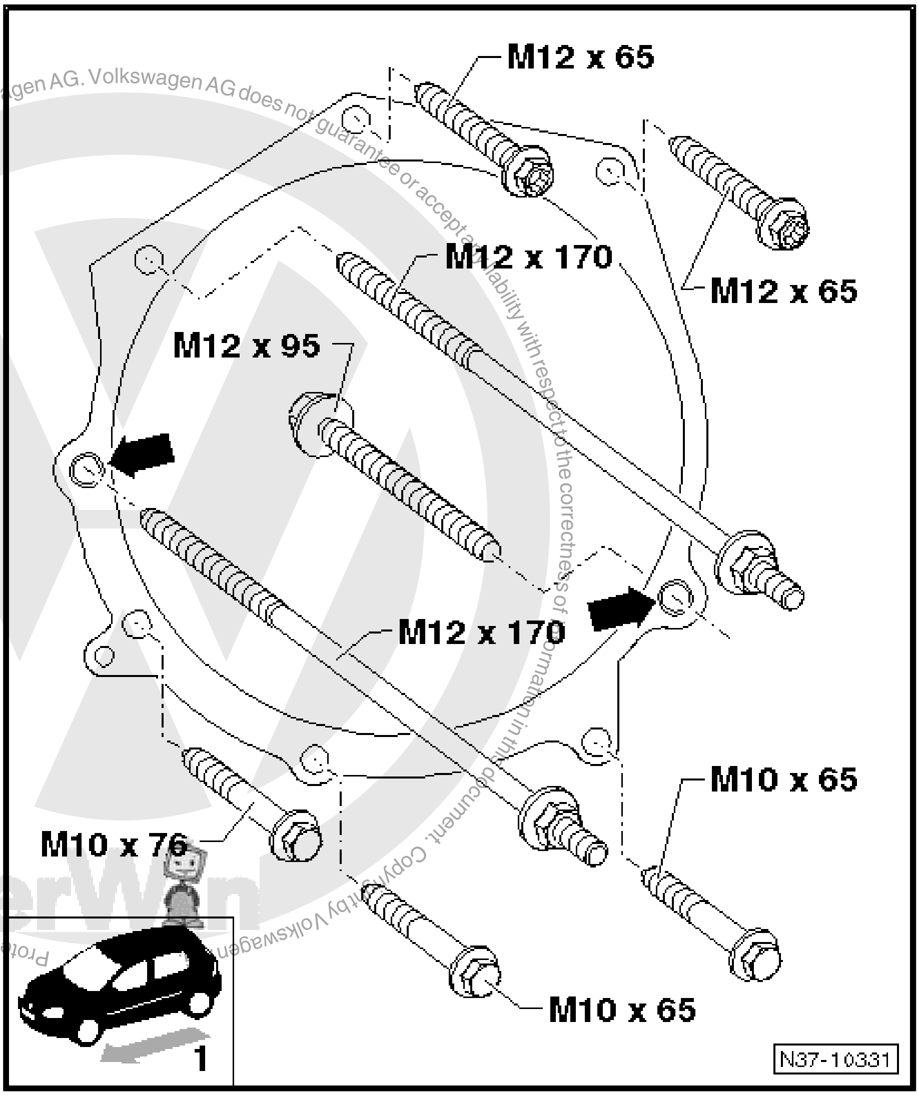
Bolt -2- = M8 x 38



Transmission Fluid Pipes to the Cooler



3.5 Engine to Transmission Tightening Specifications


M12 x 65
M12 x 170
M12 x 65
M12 x 95
M12 x 170
M10 x 65
M10 x 76
M10 x 65
1
N37-10331

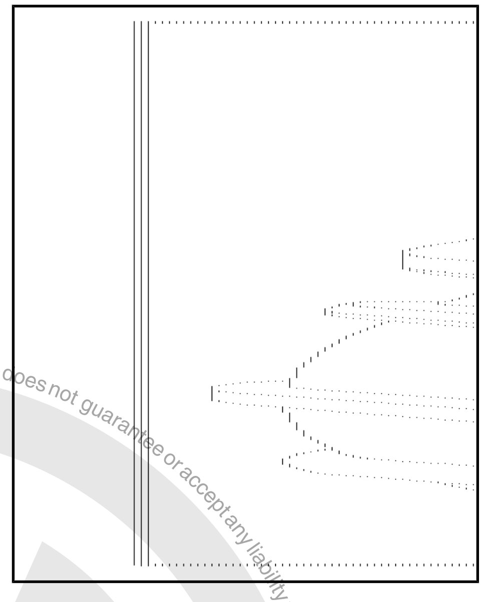
1 - Driving Direction

- Drive Plate to Torque Converter
  - ❑ 60 Nm.
  - ❑ Quantity: 6, remove and install using the socket SW15 -V/175- .
- M12 Bolts
  - ❑ 80 Nm.
  - ❑ 65 Nm, if using the insert tool 18 mm -T10179- .
- M10 Bolts
  - ❑ 40 Nm.
  - ❑ The bolts are located in the lower flange.

Arrows - for the Alignment Sleeves Inside the Engine

– Make sure that the bracket does not touch the transmission fluid cooler.

Nuts: 8 Nm



4 Diagnosis and Testing

⇒ “4.1 Selector Lever Cable, Checking“, page 37

⇒ “4.2 Selector Mechanism, Checking “, page 38

4.1 Selector Lever Cable, Checking

Short Description

To check the selector lever cable for ease of movement, disconnect it from the transmission and position the removed end so it does not make contact anywhere.

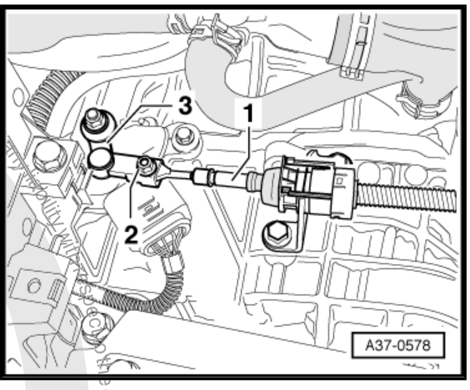
The selector lever moves and the cable will be attached again.

After that, the selector lever cable must be adjusted. Refer to ⇒ “2.5 Selector Lever Cable, Adjusting“, page 21 .

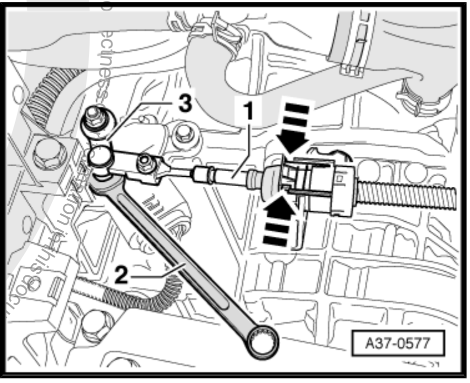
Do not grease the cable connection!

Checking

- Move the selector lever into the “P“ position.
- Loosen the adjustment bolt -2- on the cable -1-.

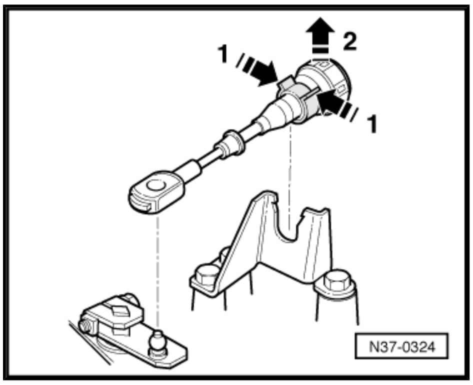


- Pry the cable -1- off the selector shaft lever -3- using a open end wrench -2-.

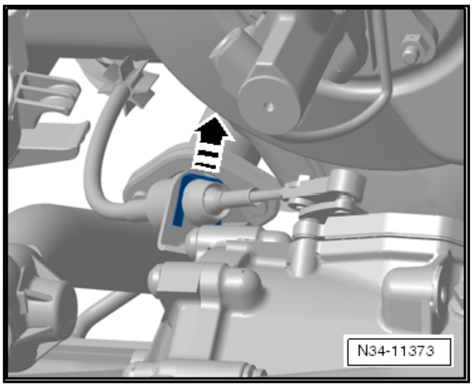


Vehicles through 02.09

- Disconnect the selector lever cable -1- from the cable bracket -2- and remove it.



Vehicles from 03.09



- Remove the retainer in the -direction of the arrow-.
- Move the selector lever from “P“ to “S“ and back to “P“ several times.
- The selector lever must move easily.
- Connect the cable to the transmission.
- Adjust the cable. Refer to ⇒ “2.5 Selector Lever Cable, Adjusting“, page 21 .

4.2 Selector Mechanism, Checking

The engine cannot be started when the selector lever is in the “R“, “D“ and “S“ positions.

Over 5 km/h (3 mph)

The shift lock solenoid must not block the selector lever when the lever is in the “N“ position. The selector lever can be moved back into a another gear.

Below 5 km/h (3 mph)

The shift lock solenoid will block the selector lever approximately 1 second after the lever is moved into the “N“ position. The selector lever can be moved out of “N“ only when the brake pedal is pressed.

Selector Lever in the “P“ Position and the Ignition is Turned On

- The brake pedal is not pressed:

The selector lever is locked and cannot be shifted out of the “P“ position with the lock button pressed. The shift lock solenoid blocks the selector lever.

- The brake pedal is pressed:

The shift lock solenoid releases the selector lever. It is now possible to shift into a gear. Shift the selector lever slowly through from “P“ to “S“, while doing this, check whether the display for the selector lever position in the instrument panel insert matches the actual selector lever position.

Selector Lever in the “N“ Position and the Ignition is Turned On

- The brake pedal is not pressed:

The selector lever is locked and cannot be shifted out of “N“ with the lock button pressed. The shift lock solenoid blocks the selector lever.

- The brake pedal is pressed:

The shift lock solenoid releases the selector lever. It is now possible to shift into a gear.

Selector Level in the “Tiptronic“ Position

- Shift the selector lever into the Tiptronic gate.

The illuminated “D“ in the cover must go out. The “+“ and “-“ must turn on.

The symbols inside the instrument cluster must change from “P R N D S“ to “6 5 4 3 2 1“.

Ignition and Lights Turned On

The appropriate symbol is being lit up in selector mechanism cover.

Transmission Range Display

Simultaneous lighting of all segments of the transmission range selector lever display indicates the transmission is in emergency running mode.

5 Removal and Installation

⇒ “5.1 Multifunction Transmission Range Switch F125“, page 40

⇒ “5.2 Selector Lever Handle“, page 43

⇒ “5.3 Handle Button, Moving to Installed Position“, page 46

⇒ “5.4 Selector Mechanism with Lever, through 02.09“, page 47

⇒ “5.5 Selector Lever Cable, through 02.09“, page 48

⇒ “5.6 Selector Mechanism with Selector Housing“, page 55

⇒ “5.7 Selector Mechanism without Selector Housing“, page 57

⇒ “5.8 Transmission, Transporting“, page 58

Rabbit (2006-209)

⇒ “5.9 Transmission, Removing“, page 59

⇒ “5.10 Transmission, Installing“, page 64

Passat

⇒ “5.11 Transmission, Removing“, page 65

⇒ “5.12 Transmission, Installing“, page 69

CC

⇒ “5.13 Transmission, Removing“, page 70

⇒ “5.14 Transmission, Installing“, page 76

Golf (from MY 2010)

⇒ “5.15 Transmission, Removing“, page 77

⇒ “5.16 Transmission, Installing“, page 82

5.1 Multifunction Transmission Range Switch F125

Special tools and workshop equipment required

♦ Torque Wrench (5-50 Nm) -V.A.G 1331-

Removing

– Move the selector lever into the “N“ position.

– Turn off the ignition.

6 Cylinder Gas Vehicles

– Remove the coolant expansion tank. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 19 ; Description and Operation .

– Connect the battery ground cable. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Removal and Installation .

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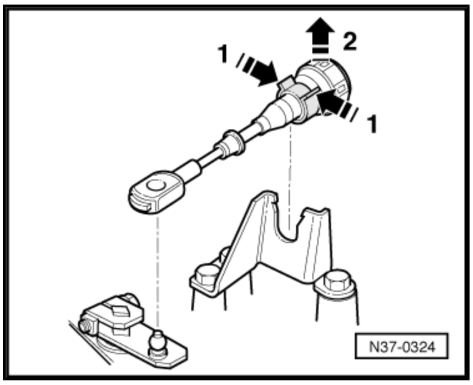
Continuation for All

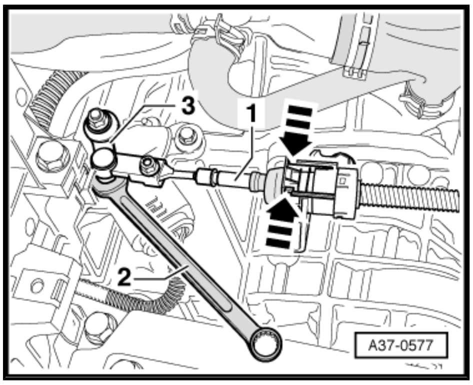
– Disconnect the selector lever cable -1- from the cable bracket -2- and remove it.

Be careful not to bend the cable. Do not use pliers, otherwise the tabs on the cable bracket may break off.



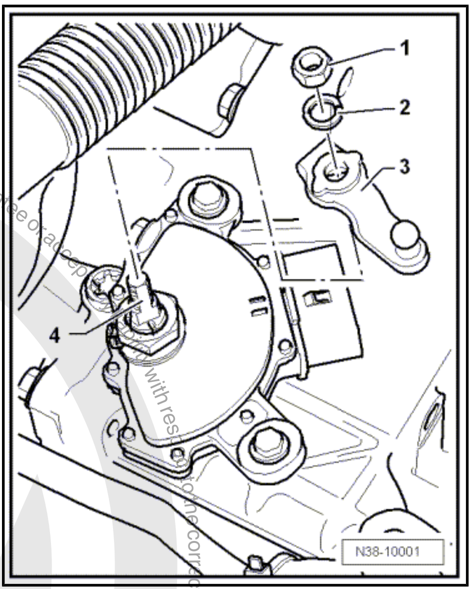
– Pry the cable -1- off the selector shaft lever -3- using a open end wrench -2-.

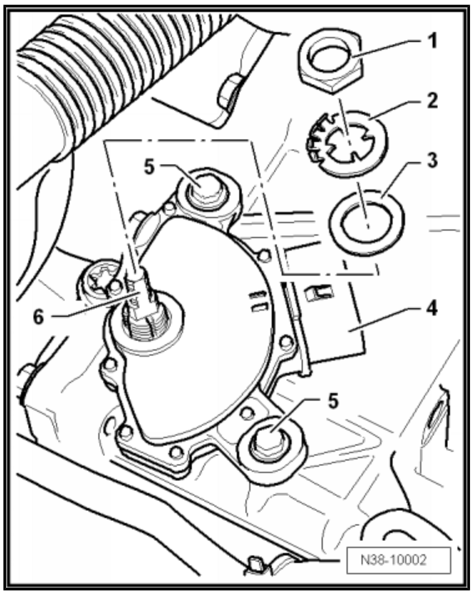
– Disconnect the connector from the multifunction transmission range switch.



– Remove the nut -1-.

– Remove the spring washer -2- and the selector shaft lever -3- from the selector shaft -4-.

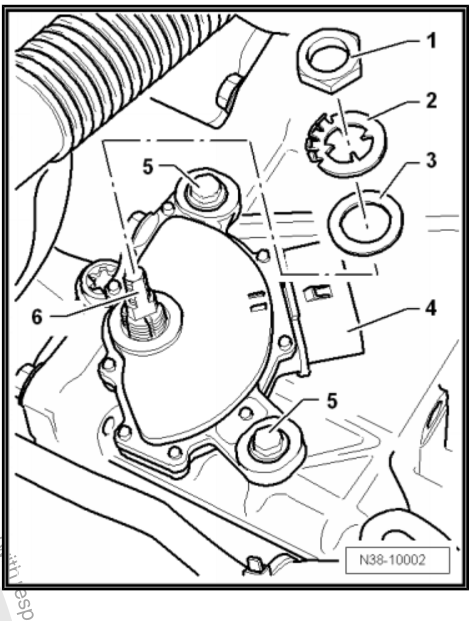




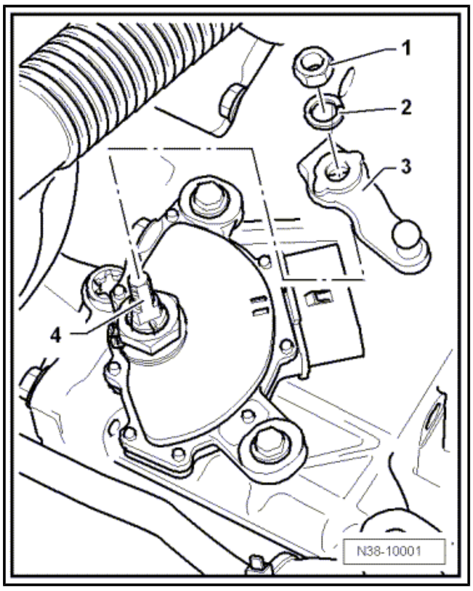
- Bend back the hooks on the lock washer -2- using a screwdriver.
- Replace the lock washer, if the hooks are broken.
- Remove the nut -1-.
- Remove the bolts -5-.
- Remove the multifunction switch -4- and washers -2 and 3- from the selector shaft -6-.

Installing

Install in the reverse order of removal. Pay attention to the following:



- Install the multifunction switch -4- to the selector shaft -6-.
- Install the multifunction switch bolts -5- hand tight.
- Install the washers -2 and 3- onto the selector shaft -6-.
- Install the washer -2- with the hooks facing up.
- Install the washer -2- with the long narrow guide into the long narrow depression in the selector shaft -6-.
- Install and tighten the nut -1- to 7 Nm.
- Secure the nut -1- by bending the hooks on the lock washer downward -2-.
- Replace the lock washer, if the hooks are broken.



- Install the selector lever -3- onto the selector shaft -4-.
- Move the selector lever -3- into the “P“ position. This means, push the selector lever -3- opposite the direction of travel until it stops.
- Move the selector lever -3- into the “N“ position. Push the lever -3- two positions forward in the direction of travel.
- Install the spring washer -2- and the nut -1- onto the selector shaft -4-.
- Tighten the nut -1- to 13 Nm.

6 Cylinder Gas Vehicles

- Install the coolant expansion tank. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 19 ; Description and Operation .
- Connect the battery ground cable. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Removal and Installation .

Continuation for All

- Check the selector mechanism. Refer to ⇒ “4.2 Selector Mechanism, Checking “, page 38 .

5.2 Selector Lever Handle

Short Description

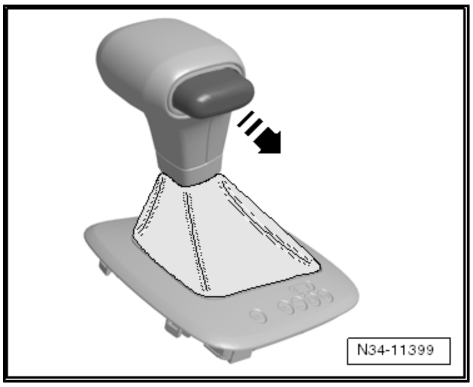
There are different handles depending on the model.

The handle is removed together with the shift cover.

Removing

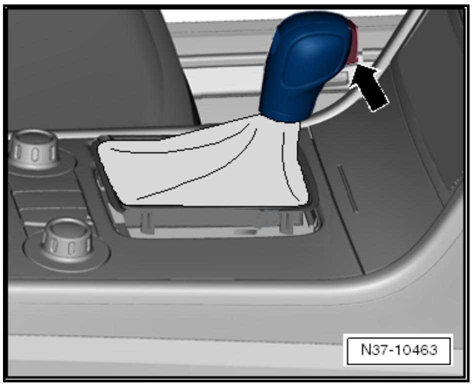
- Move the selector lever into the “D“ position.

Handle with the Button on the Side



- Pull the button out of the handle just far enough until there is a small gap between the handle and the button. The button locks when released.
- Prevent the button from being pressed in with a cable tie or wire.

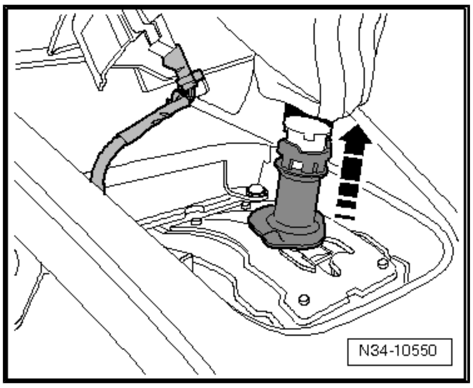
Handle with the Button in the Front



It is not necessary to pull out the button manually. The button locks in the installed position -arrow-. when the handle is removed.

Continuation for all Handles

- Remove the cover.
- Disconnect the connector from the selector cover.
- Push the sleeve upward and unlock the handle.

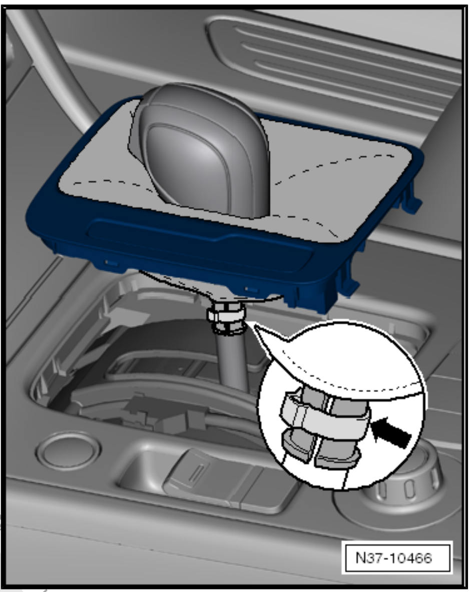


Only Handles with Clamps

- Cut the clamp under the boot -arrow- with side cutters.

Continuation for all Handles

- Remove the handle from the selector lever without pushing the button.



Note

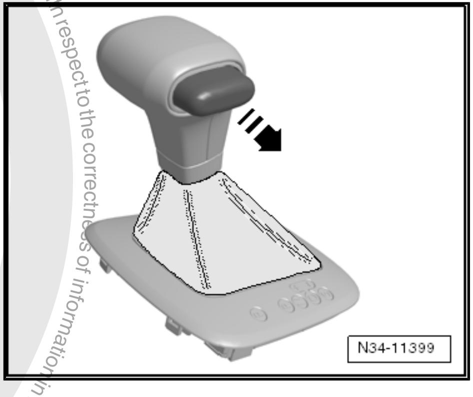
Do not push the button once the handle has been removed otherwise it will not be possible to install the handle again.

Installing

- Install in reverse order of removal. Note the following:
- The selector lever is in the “D“ position.

Handle with the Button on the Side

- The button inside the handle is pulled out and is protected from getting pushed in again.

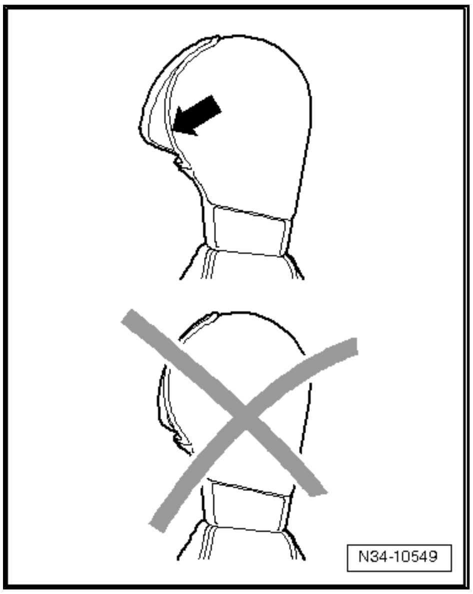


Handle with the Button in the Front

- The button is in the installed position -arrow-.

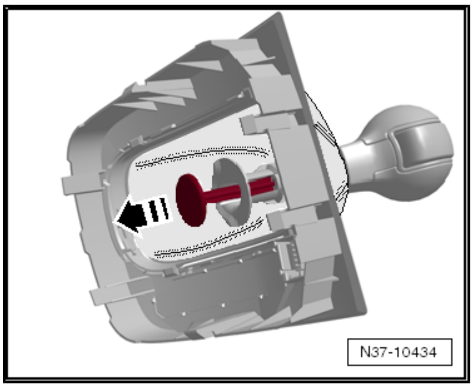
If the button was pushed in by mistake, the installed position can be set again.

– Move the button to the installed position. Refer to ⇒ “5.3 Handle Button, Moving to Installed Position“, page 46 .



Note

A new handle is delivered with an assembly aid. Pull out the assembly aid just prior to installation.



Continuation for all Handles

– Install the handle all the way onto the selector lever and lock it.

– Push the sleeve down to lock it.

Only Handles with Clamps

– Install the handle with a new clamp.

– Tighten the clamp using the hose clamp pliers -V.A.G 1275- .

– Press the button after installing it.

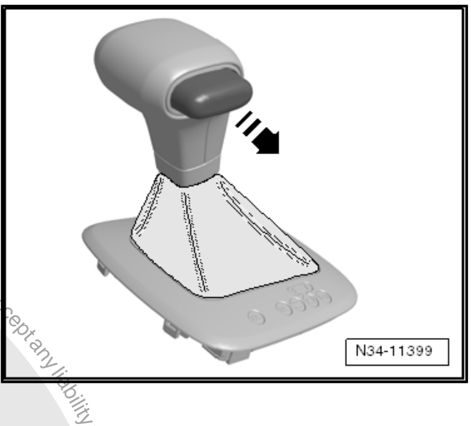
Note

If the button stays in the handle after being pressed, this means it was installed incorrectly. If this happens, remove the handle again and move the button to the installed position again. Refer to ⇒ “5.3 Handle Button, Moving to Installed Position“, page 46 . Then install the handle again.

Further installation is performed in the reverse sequence.

5.3 Handle Button, Moving to Installed Position

Handle with the Button on the Side



- Pull the button out of the handle just far enough until there is a small gap between the handle and the button. The button locks when released.
- Prevent the button from being pressed in with a cable tie or wire.

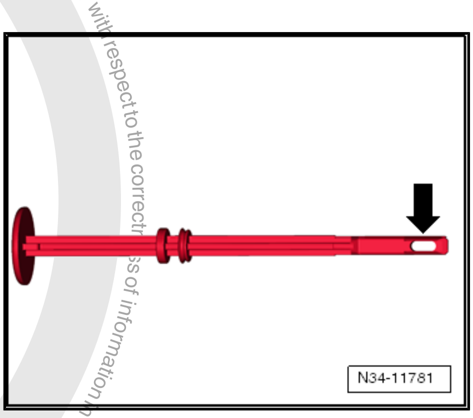
Handle with the Button in the Front

The button cannot be pulled out on these handles.

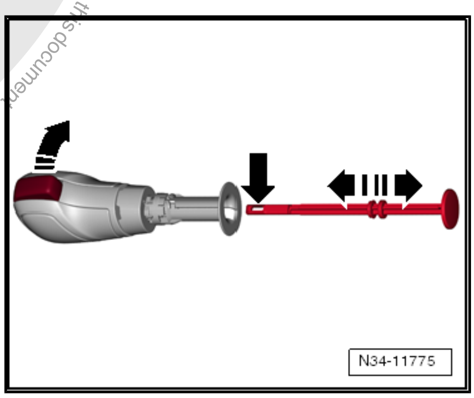
There are two way to move the button into the installed position, »with« or »without« an assembly aid. The following describes both ways.

Moving the handle “with“ an assembly aid into the installed position

Make sure the assembly aid has an eye -arrow- at the front. Other assembly aids cannot be used.

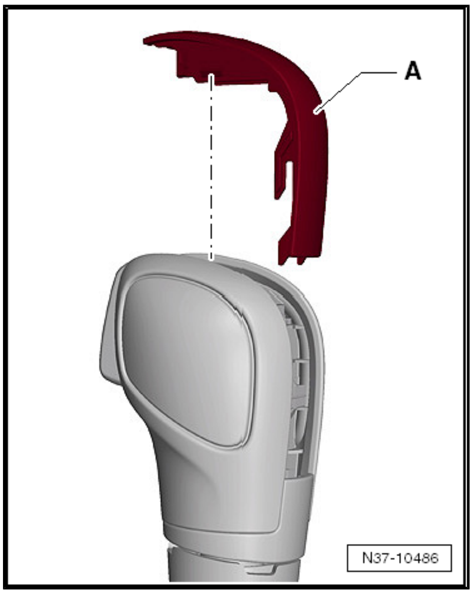


- Press the button and push the assembly aid (with the eye) -arrow- all the way in until it latches into place. Then release the button. The button locks in the installed position when the assembly aid is pulled out.



Moving the handle “with“ an assembly aid into the installed position

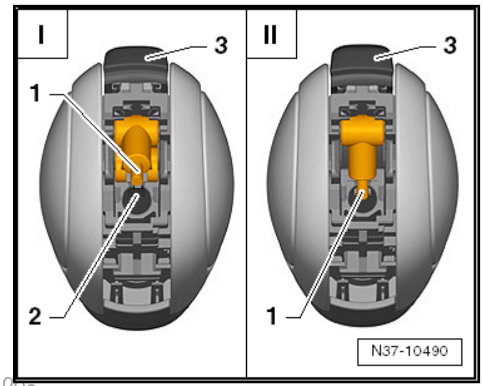
– Remove the trim -A- from the handle.



– Push the small lever -1- into the groove -2- with a screwdriver. This pushes the button -3- into the installed position.

-I- the button is in the pressed position

-II- the button is in the installed position



Note

- *Push the lever into the groove and no further.*
- *Install the trim back onto the selector handle only after the handle is installed. This way it is possible to see if the small lever fits into the pull rod when the button is pushed.*

5.4 Selector Mechanism with Lever, through 02.09

Note

Check the cable for ease of movement after installing it.

Removing

– Remove the center console. Refer to “Storage Compartments, Covers and Trim“ in ⇒ Body Interior; Rep. Gr. 68 ; Removal and Installation .

– Remove the cable from the transmission. Refer to ⇒ “5.5 Selector Lever Cable, through 02.09“, page 48 .

– Remove the exhaust system components underneath the heat shield. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 26 ; Description and Operation .

– Remove the heat shield under the vehicle.

– Remove the 4 nuts for the selector mechanism from above.

Tightening specification for the nuts: 8 Nm

Installing

Installation is performed in the reverse sequence.

– Check the cable after installing it. Refer to ⇒ page 37 .

5.5 Selector Lever Cable, through 02.09

Note

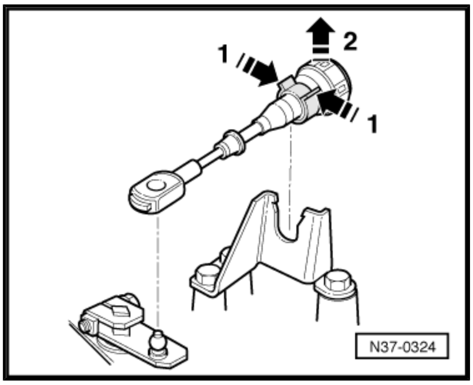
Check the cable for ease of movement after installing it.

Removing

– Move the selector lever into the “S“ position .

– Disconnect the selector lever cable -1- from the cable bracket -2- and remove it.

Be careful not to bend the cable. Do not use pliers, otherwise the tabs on the cable bracket may break off.



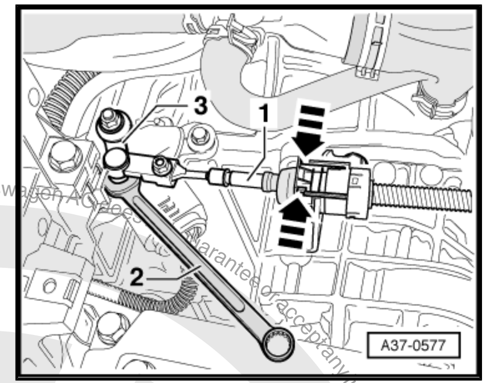
– Pry the cable -1- off the selector shaft lever -3- using a open end wrench -2-.

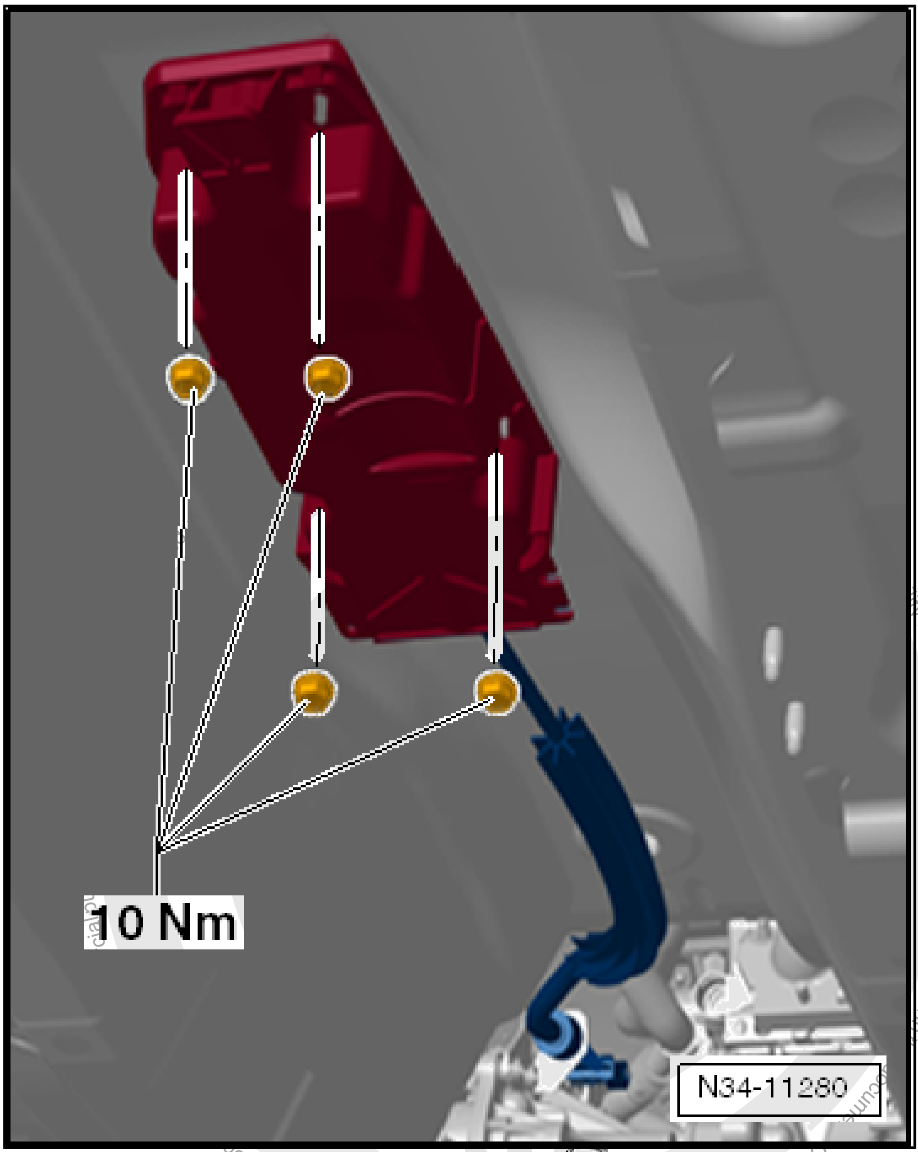
– Lift the vehicle.

To remove the cable and/or the selector mechanism, remove the heat shield and, if necessary, any exhaust system components. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 26 ; Description and Operation .

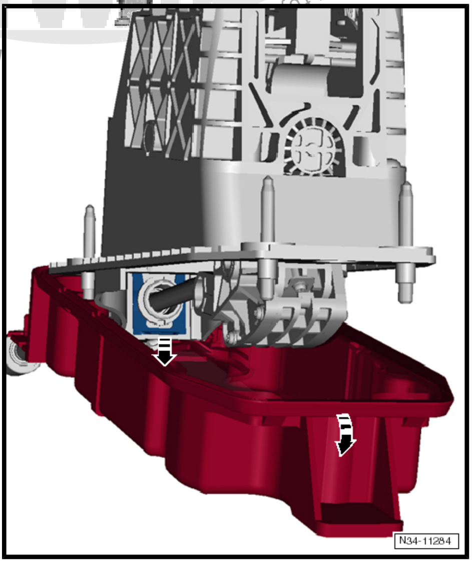
– Remove the heat shield.

– Remove the selector housing from under the selector mechanism.

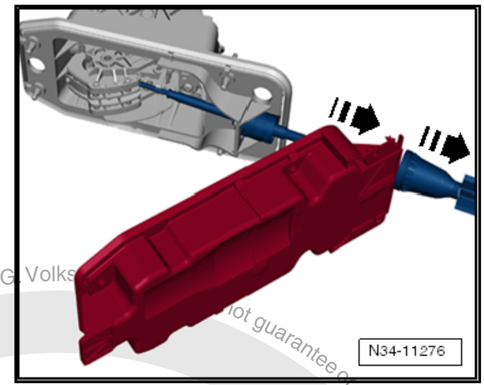



10 Nm
N34-11280

- Remove the retainer. Always replace the retainer.

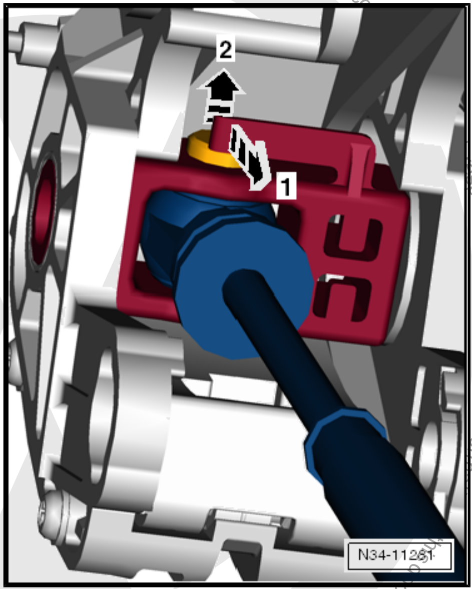


The selector housing is pushed forward on the cable.

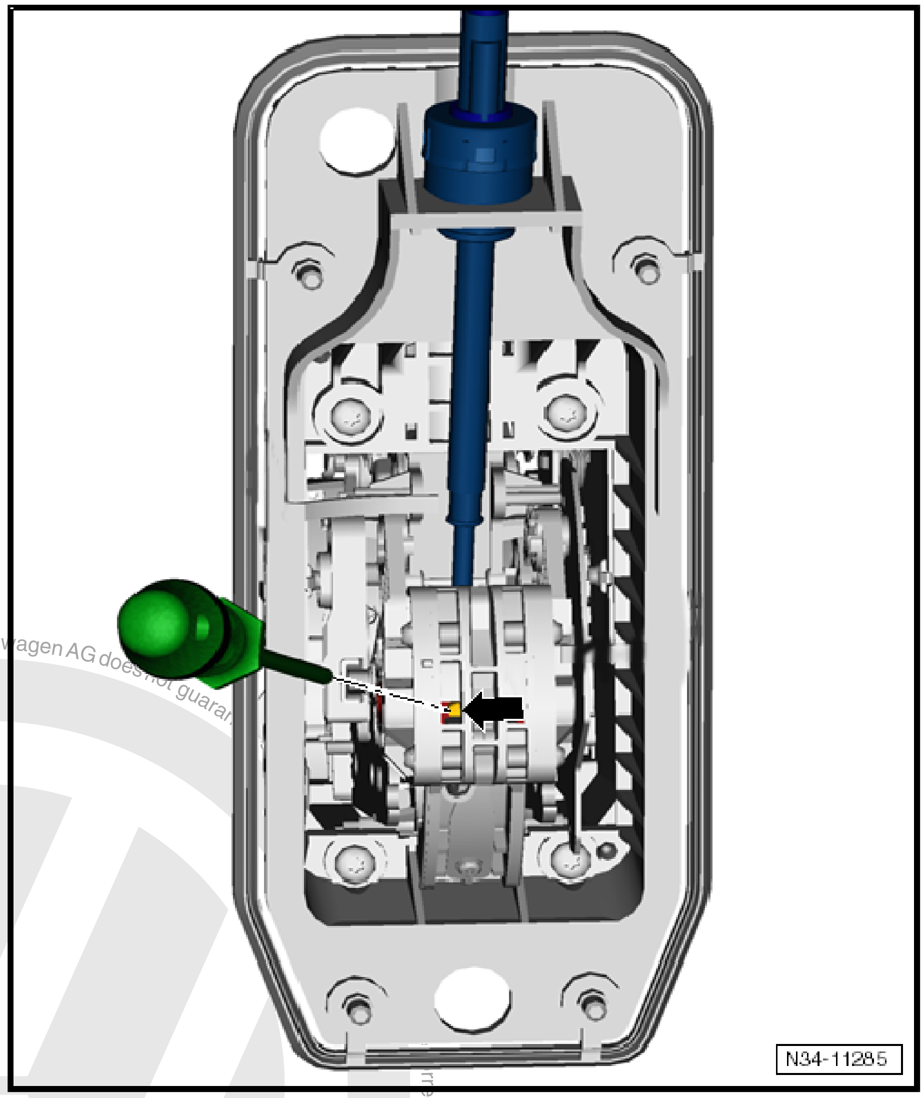


The retainer must be pushed forward in order to remove the cable -1-.

– Push the pin upward at the same time with a screwdriver -2-.

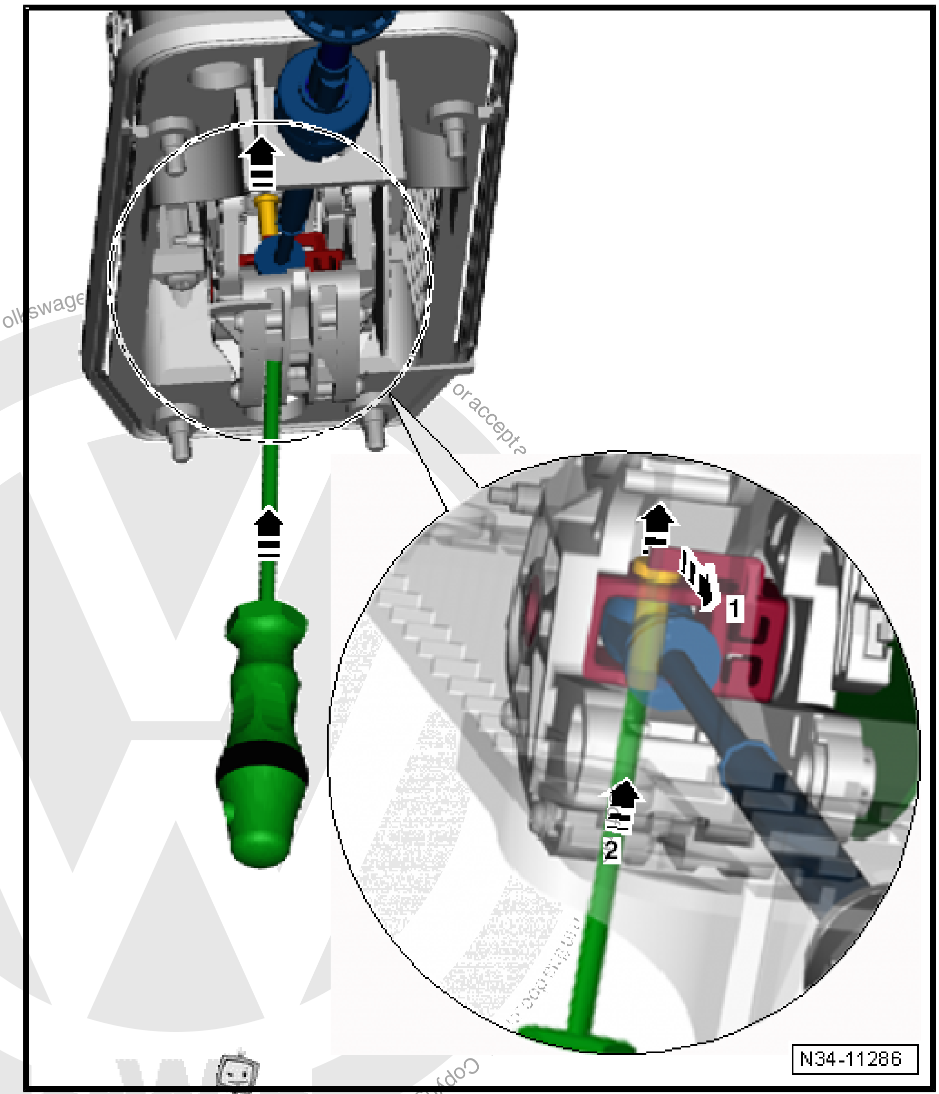


– Insert the screwdriver from underneath while pushing the retainer forward.



For Clarity

- -1- push the retainer forward
- -2- push the pin upward

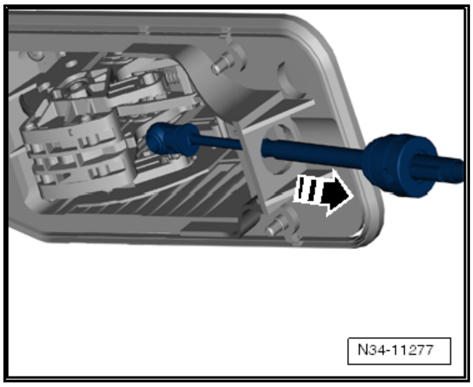


– Remove the selector lever cable.

Remove the selector housing from the cable

Installing

Do not grease the cable.



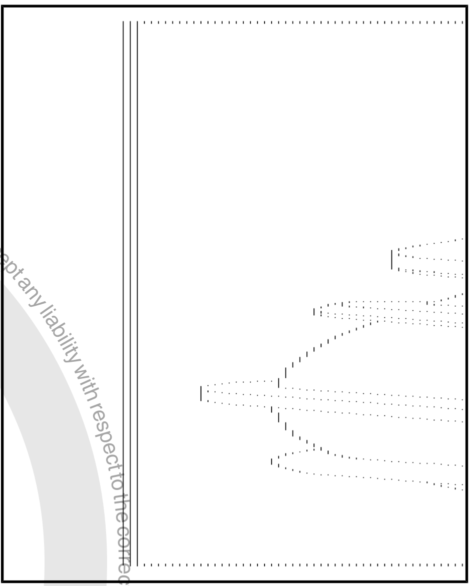
– Route the selector lever cable so that it is free of tension and install it into cable bracket on the transmission but do not secure it yet.

– When installing, make sure the selector lever cable is routed correctly.

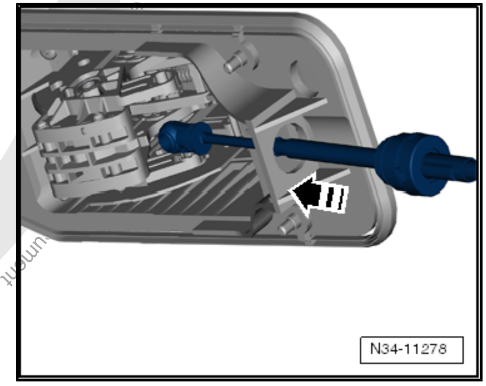
– Clip the selector lever cable into the bracket. Make sure that the bracket does not touch the transmission fluid cooler.

Nuts: 8 Nm

– Mount the selector housing on the cable.

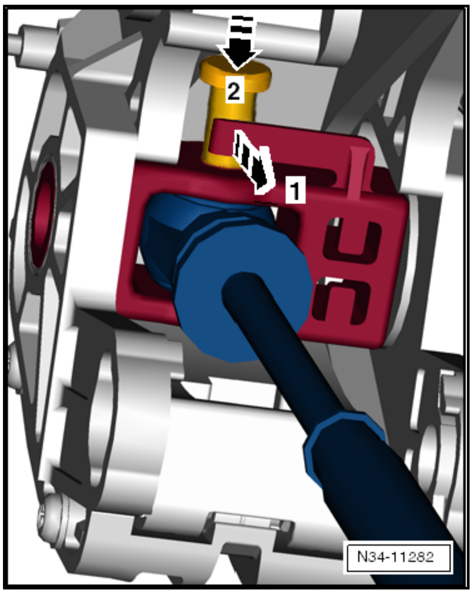


– Install the selector lever cable into the selector mechanism.

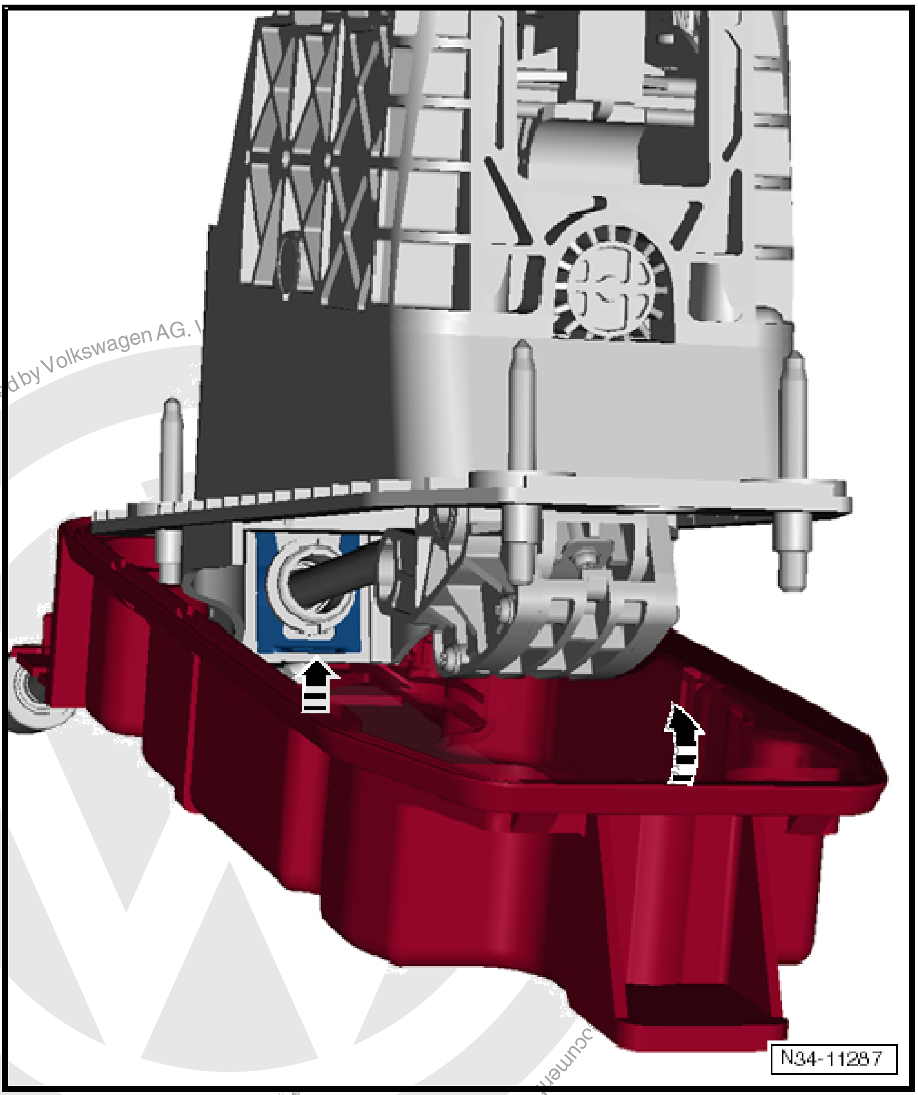


– Insert the cable into the bracket and then insert the pin through the eye from the top

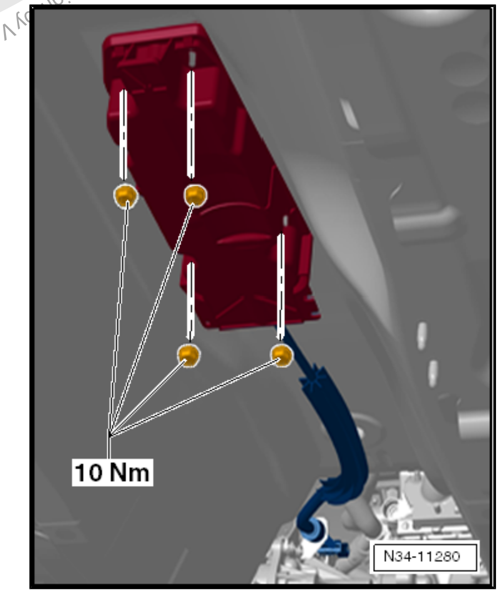
Install the retainer only after having checked the cable for ease of movement. Refer to ⇒ “4.1 Selector Lever Cable, Checking“, page 37 .



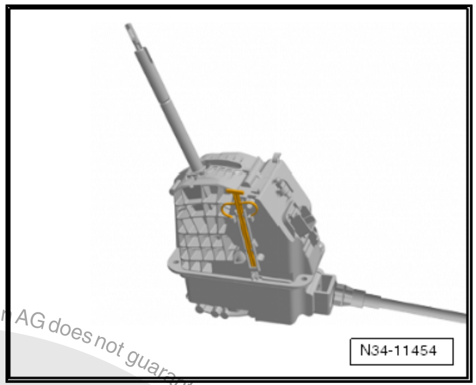
– Secure the cable with a new retainer to the cable bracket on the selector mechanism.



- Install the selector housing, the heat shield and the exhaust system.
- Adjust the selector lever cable after installing. Refer to ⇒ “4.1 Selector Lever Cable, Checking“, page 37 .



5.6 Selector Mechanism with Selector Housing



Short Description

The selector mechanism and the selector lever cable cannot be separated from each other. Both are removed with the selector housing.

Remove the center console inside the passenger compartment.

It is necessary to remove the heat shield under the vehicle.

It is possible to remove and install the selector mechanism with the selector lever cable alone without the selector housing. Refer to ⇒ “5.7 Selector Mechanism without Selector Housing“, page 57 .

Note

After installation, the selector lever cable movement must be checked and adjusted.

Removing

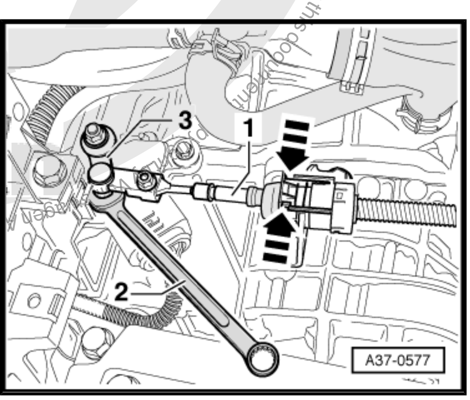
– Remove the selector lever handle. Refer to ⇒ “5.2 Selector Lever Handle“, page 43 .

– Remove the center console. Refer to “Storage Compartments, Covers and Trim“ in ⇒ Body Interior; Rep. Gr. 68 ; Removal and Installation .

– Disconnect the connector from the selector mechanism to the vehicle wiring harness.

– Remove the air filter housing. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 24 ; Removal and Installation .

– Pry the cable -1- off the selector shaft lever -3- using a wrench -2-.

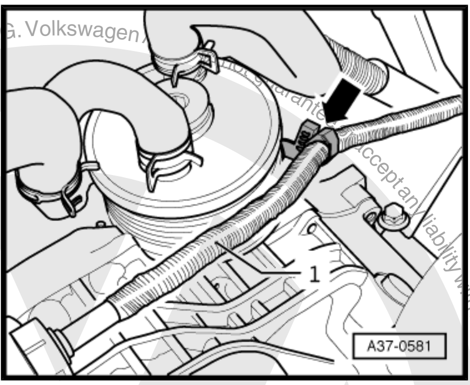


Caution

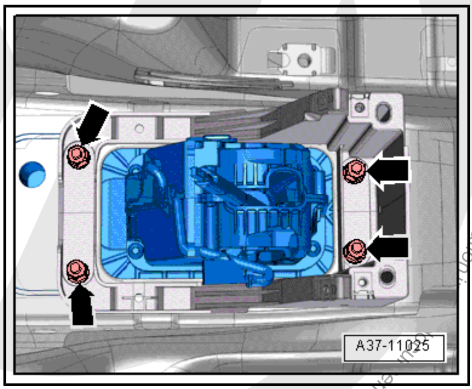
The retainers on the selector lever cable break very easily. The complete selector mechanism with selector lever cable must be replaced if one of the tabs breaks off.

– Squeeze the retainers on the selector lever cable -arrows- and remove the selector lever cable from the cable bracket.

– Do not bend the cable.



- Disconnect the selector lever cable -1- from the bracket -arrow- on the transmission.
- Lift the vehicle.
- Part of the exhaust system must now be removed in order to remove the cable and/or the selector mechanism.
- Remove the heat shield.



Note

A second technician is required under the vehicle to remove the selector mechanism.

- Remove the nuts -arrows- in the vehicle interior.

Tightening specification, see -item 5- in the ⇒ “2.7 Selector Mechanism Overview, from 03.09“, page 24 .

- Remove the selector mechanism with the selector lever cable and selector housing downward.

Installing

Install in the reverse order of removal.

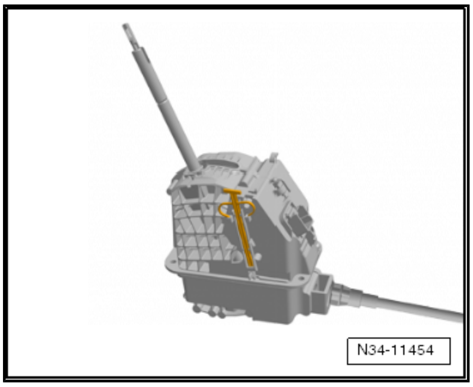
Note

- ♦ *Do not bend or kink the selector lever cable.*
- ♦ *Do not lubricate the selector lever cable.*

- Push the selector lever cable carefully onto the selector lever and insert it into the cable bracket.
- Install the exhaust system. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 26 ; Description and Operation .
- Install the heat shield
- Install the center console. Refer to “Storage Compartments, Covers and Trim“ in ⇒ Body Interior; Rep. Gr. 68 ; Removal and Installation .
- Install the selector lever handle. Refer to ⇒ “5.2 Selector Lever Handle“, page 43 .
- Adjust the selector lever cable. Refer to ⇒ “2.5 Selector Lever Cable, Adjusting“, page 21 .
- Check the selector mechanism. Refer to ⇒ “4.2 Selector Mechanism, Checking “, page 38 .
- Install the air filter housing. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 24 ; Removal and Installation .

5.7 Selector Mechanism without Selector Housing

Short Description


N34-11454

The selector mechanism and the selector lever cable cannot be separated from each other. Both are removed at the same time.

Remove the center console inside the passenger compartment.

Tie a cord/wire to the cable before removal. Use the cord/wire to help move the cable in and out between the tunnel and the heat shield.

The selector mechanism with selector lever cable can be removed and installed together with the selector housing. Refer to ⇒ “5.6 Selector Mechanism with Selector Housing“, page 55 .

Note

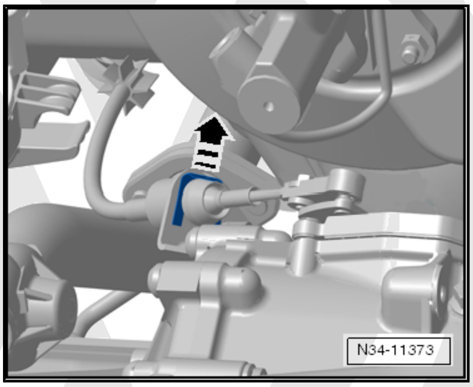
Check the cable for ease of movement after installing it.

– Remove the selector lever handle. Refer to ⇒ “5.2 Selector Lever Handle“, page 43 .

– Remove the center console. Refer to “Storage Compartments, Covers and Trim“ in ⇒ Body Interior; Rep. Gr. 68 ; Removal and Installation .

– Disconnect the connector from the selector mechanism to the vehicle wiring harness.

– Remove the air filter housing. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 24 ; Removal and Installation .

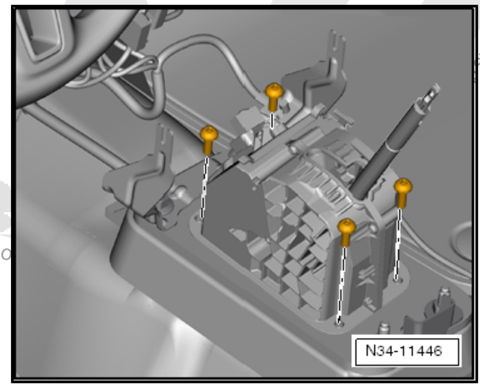

N34-11373

– Remove the lock washer.

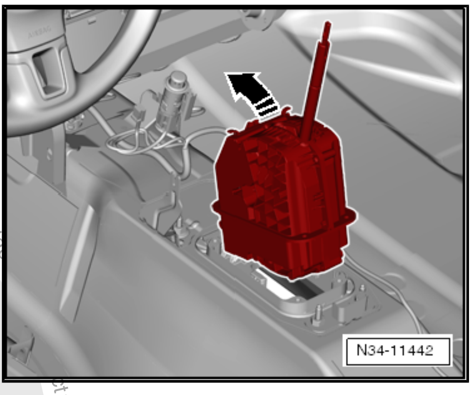
– Always replace the lock washer on the selector lever cable.

– Remove the cable from the ball head.

– A long cord/wire is then attached to the end of the cable. This cord/wire is used to pull the cable between the tunnel and the heat shield during installation.


N34-11446

– Remove the 4 bolts.



- Pull the selector mechanism and cable out of the center tunnel. Make sure the cord/wire is pulled through far enough so that it is still reachable from the engine compartment.
- Remove the cord/wire from the cable.

Installing

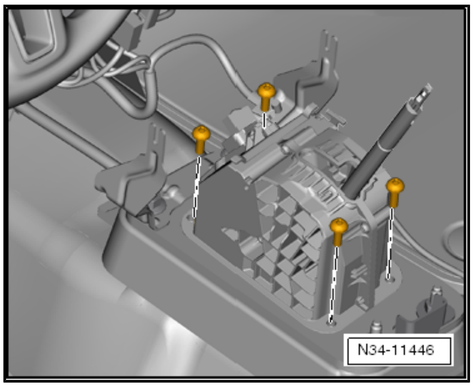
Install in the reverse order of removal. Note the following:

A second technician will be needed in order to feed the cable from the passenger compartment into the engine compartment.

Note

- *Do not bend or kink the selector lever cable.*
- *Do not lubricate the selector lever cable.*

- Attach the cord/wire to the end of the cable that was pulled from the engine compartment into the passenger compartment while removing the selector mechanism.
- Guide the selector mechanism and cable through the opening in the center tunnel.
- From the engine compartment, the second technician pulls the cord/wire with the cable through the tunnel until it is possible to attach the cable to the bracket.
- Remove the cord/wire from the cable.



- Attach the selector mechanism with 4 bolts to the selector housing.

Tightening specification: 8 Nm

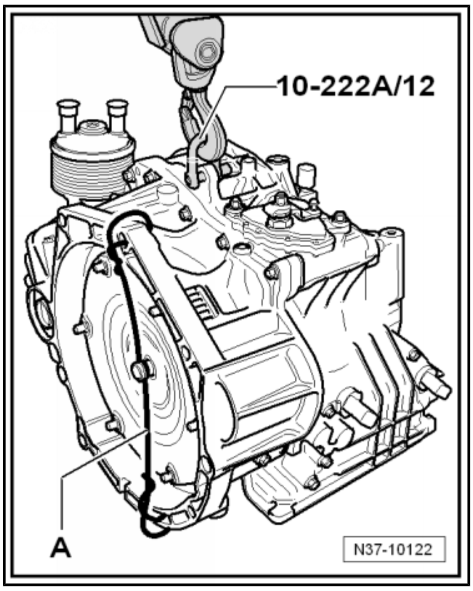
- Before positioning the ball head: Check the cable. Refer to ⇒ “4.1 Selector Lever Cable, Checking“, page 37 .
- Install the center console. Refer to “Storage Compartments, Covers and Trim“ in ⇒ Body Interior; Rep. Gr. 68 ; Removal and Installation .
- Install the selector lever handle. Refer to ⇒ “5.2 Selector Lever Handle“, page 43 .
- Adjust selector lever cable after installing. Refer to ⇒ “2.5 Selector Lever Cable, Adjusting“, page 21 .
- Check the selector mechanism. Refer to ⇒ “4.2 Selector Mechanism, Checking “, page 38 .
- Install the air filter housing. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 24 ; Removal and Installation .

5.8 Transmission, Transporting

Special tools and workshop equipment required

- Shackle -10 - 222 A/12-

The shackle -10 - 222 A/12- can be used when transporting the transmission and for setting up the transmission support -3282- .



– Secure the torque converter -arrow- with wire, for example-A-, to prevent it from falling during transport.

– Remember there is still fluid in the transmission. Do not turn the transmission with the vents facing downward when transporting or when it is on the assembly stand. The fluid will leak out.

5.9 Transmission, Removing

– If possible, before removing print out a diagnostic protocol for the vehicle. Affix the protocol to the transmission before sending back the removed transmission.

Short Description

The transmission is remove downward by itself. The engine remains in the vehicle.

Remove the battery housing, the air filter and the engine cover. The engine with transmission are then supported so that the transmission mount can be removed.

Remove the noise insulation and the drive axles from underneath. Lower the transmission with the transmission jack.

Note

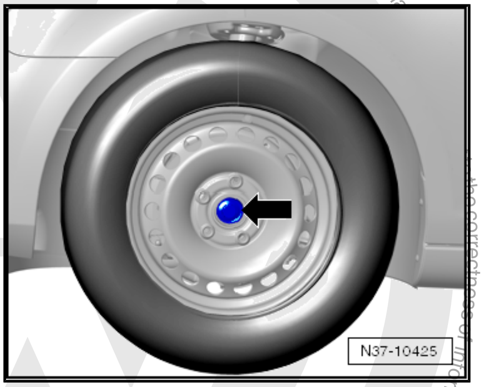
The subframe is not removed.

Special tools and workshop equipment required

- Engine-/GearboxJjack -V.A.G 1383 A-
- Socket SW15 -V/175-
- Transmission Support -3282-
- Wedge Tool -T10161-
- Torque Wrench (40-200 Nm) -V.A.G 1332-
- Adjusting Plate -3282/36-
- Engine Support Bridge -10-222 A-
- Engine Support Feet -10-222 A/8-
- Adapter -10-222 A/7-
- Bracket with Spindle and Hook -10-222 A/10-
- Engine Support Adapter -10-222 A/3-
- Shackle -10-222 A/12-
- Hose Clip Pliers -V.A.G 1921-

Procedure

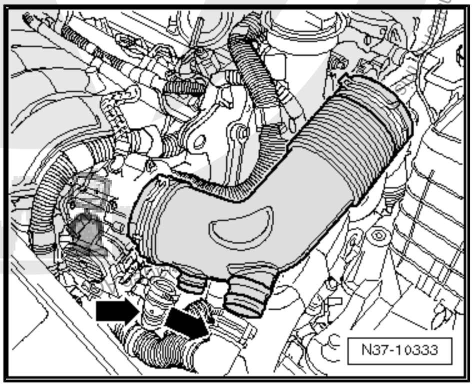
- Before removing, if possible, print out the diagnostic protocol for the vehicle. Affix the protocol to transmission before sending back the removed transmission in the usual way.
- Move the selector lever into the “P“ position.
- Lift the vehicle, all 4 lift points of the hoist are at the same height.
- Push the brake in order to remove the left drive axle bolt -arrow- (second technician required).



Note

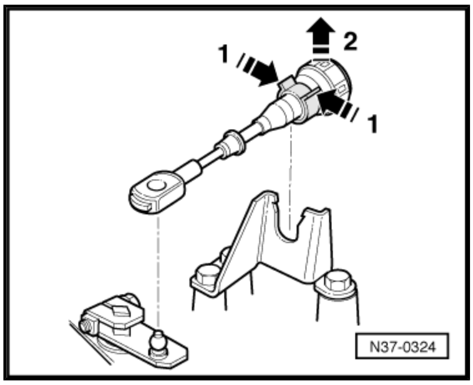
Do not set the vehicle on the floor. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40 ; Removal and Installation .

- Remove the engine cover/upper air filter section.
- Disconnect the hoses -arrows- and remove the intake tube from the throttle valve.
- Remove the battery and battery housing. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Removal and Installation .



- Disconnect the selector lever cable -1- from the cable bracket -2- and remove it.

Be careful not to bend the cable. Do not use pliers, otherwise the tabs on the cable bracket may break off.

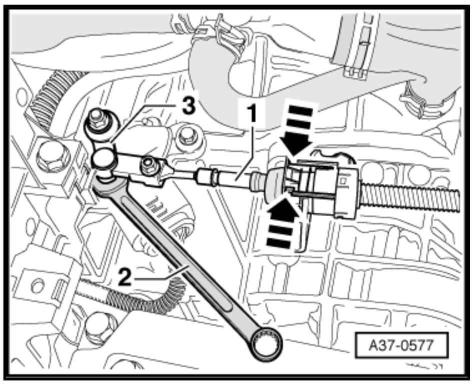


- Pry the cable -1- off the lever -3- using a open-end wrench -2-.
- Disconnect the connectors from the transmission and starter.

♦ Multifunction transmission range switch

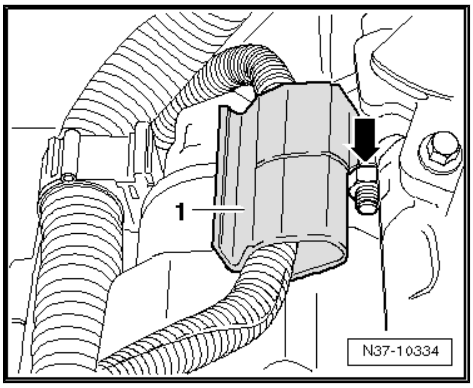
♦ Starter

♦ Ground cable from the transmission mount bracket

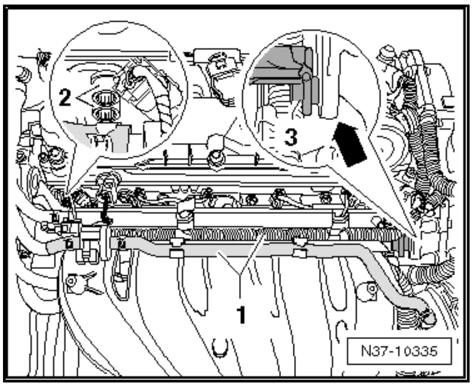


- Remove the wire bracket -1- from the starter stud bolt -arrow-.
- Remove the upper bolt from the starter.
- Remove the upper engine transmission bolts.

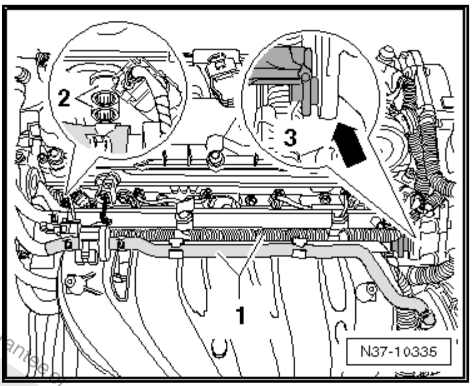
So that engine and transmission can be supported:



- Remove the lines -1- from the transport strap -3-.


2
3
1
N37-10335

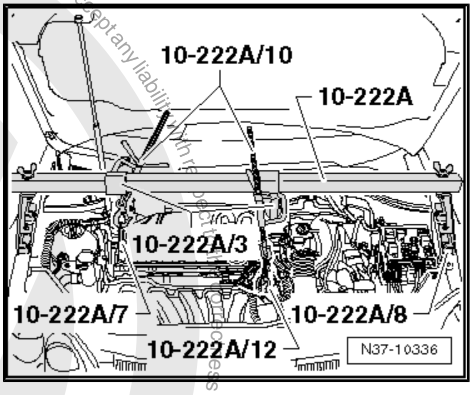
- Remove the transport strap -3- from the engine -2- and pull it out of the lifting eye -arrow-.
- Attach one shackle -10-222 A/12- to this lifting eye.


2
3
1
N37-10335

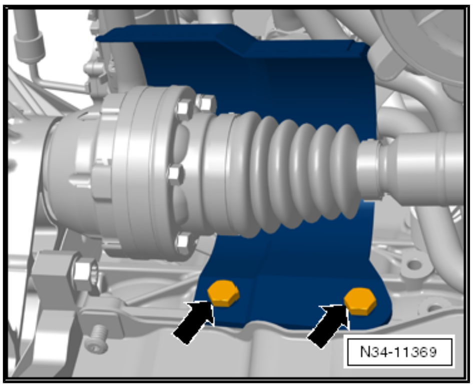
- Install the engine support bridge -10-222 A- .
- Extend the right bracket with spindle and hook -10-222 A/10- with the adapter -10-222 A/7- .

The hook points downward and will be engaged on the cylinder block later.

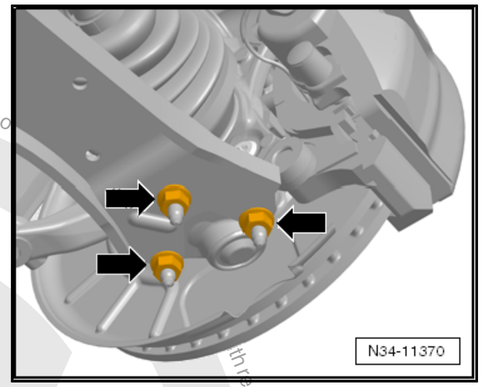
- Remove the noise insulation.
- Remove the lower section of the left wheel housing liner.


10-222A/10
10-222A
10-222A/3
10-222A/7
10-222A/8
10-222A/12
N37-10336

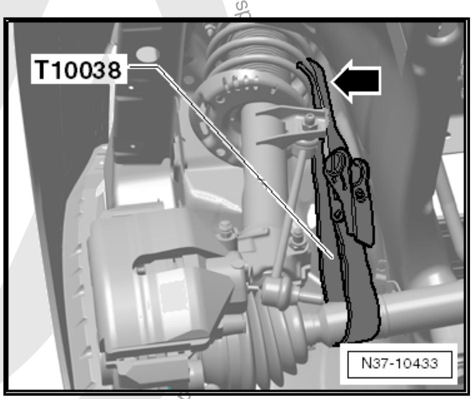
- Remove the right drive axle heat shield bolts -arrows- and shield.



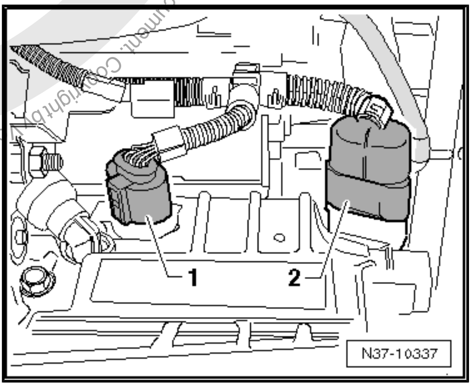
- Remove the ball joint to lower control arm nuts -arrows- both sides.
- Remove both drive axles from the transmission. Refer to: ⇒ Suspension, Wheels, Steering; Rep. Gr. 40 ; Removal and Installation .
- Remove the left drive axle.



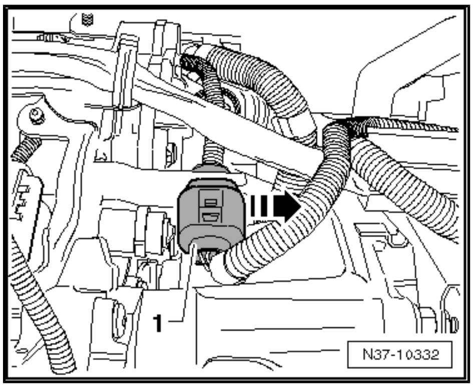
- Lift the right drive axle as far as possible and then tie it up.



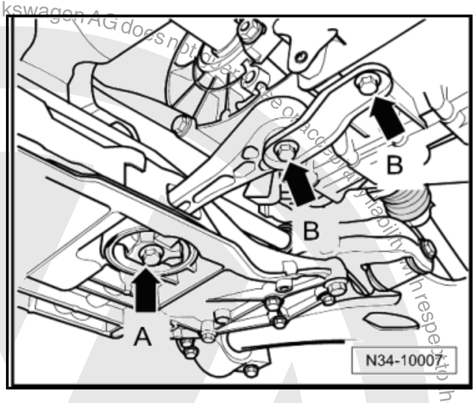
- Disconnect the connectors -1 and 2- from the transmission.



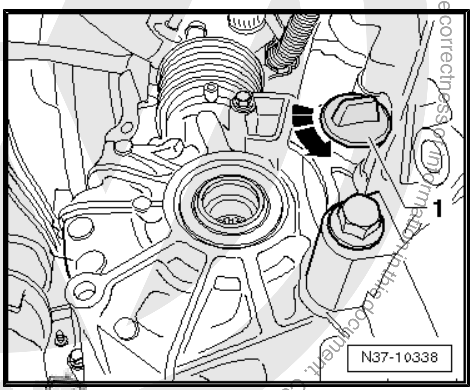
- Remove the connector -1- from the bracket under the starter and then disconnect it.
- Remove the bracket from the starter lower bolt.
- Remove the lower bolt from the starter and then remove the starter.



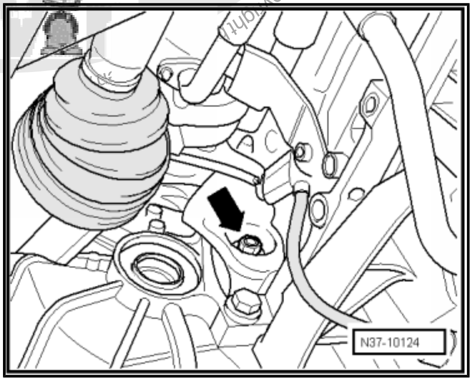
- Remove the pendulum support, first remove bolt -A-, and then bolts -B-.
- Drain the coolant.



- Turn the cap -1- in the -direction of the arrow- and remove it.

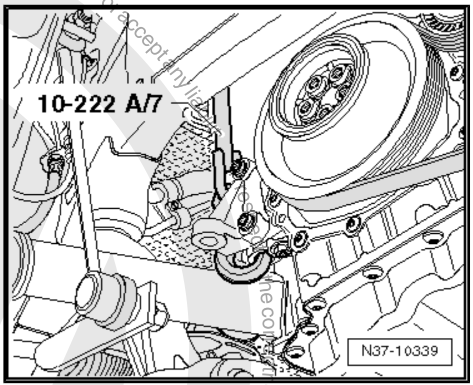


- Remove the six torque converter nuts -arrow- using the socket SW15 -V/175- .



Note

Carefully rotate the engine further!

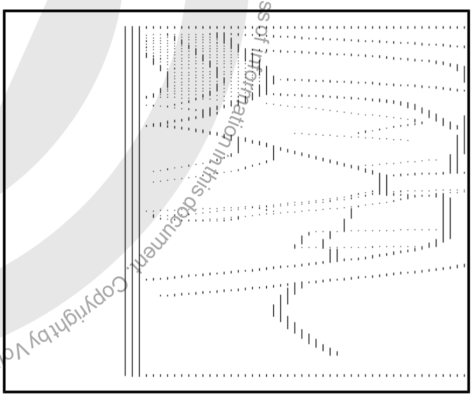


– Engage the adapter -10-222 A/7- to the cylinder block.

– Remove the coolant hoses from the transmission fluid cooler.

Tension the right spindle one turn (more turns are not necessary).

– Support the engine and transmission with the left spindle. Do not lift it.



– Remove the transmission mount bracket -A-.

– Turn the left spindle on the engine support bridge -10-222 A- and slightly lower the engine and transmission.

Six turns is sufficient.

– Remove the lower bolts between the engine and the transmission.

– Leave one easily accessible bolt for safety.

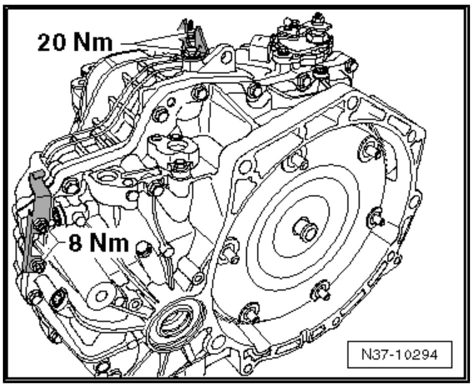
– Support the transmission with the engine-/gearbox jack -V.A.G 1383 A- , the transmission support -3282- and the adjusting plate -3282/36- before removing the last bolt.

– Remove the last bolt.

– Separate the transmission from the engine.

Note

Pay attention to the torque converter. It must be removed together with the transmission.



– The cable bracket and the selector lever cable bracket must be replaced when installing a new transmission.

5.10 Transmission, Installing

– Make sure the alignment sleeves are pressed into the engine flange.

– See how the plate fits between the engine and transmission. The plate must contact the engine along entire perimeter when pressing lightly against engine using both hands. If it is above the engine, then it is not hooked into the cylinder block correctly.

Further installation is performed in the reverse sequence.

The engine and the transmission must be secured free of tension.

– Replace all transmission mount bolts.

– First install all new bolts by hand.

When installing, install the transmission mount bracket to the transmission first. Tighten the bolts to 40 Nm + 90° (1/4) additional turn.

Adjust the old fit between both bolts using a screwdriver when tightening the bracket bolts to the vehicle. Tighten the two larger bolts to 60 Nm + 90° (1/4) additional turn.

Tightening specification, transmission to engine. Refer to ⇒ “3.2 Engine to Transmission Tightening Specifications“, page 31 .

– Adjust the selector lever cable. Refer to ⇒ “2.5 Selector Lever Cable, Adjusting“, page 21 .

– Check the transmission fluid level. Refer to ⇒ “1.1 Transmission Fluid Level, Checking and Filling“, page 10 .

– Perform a basic setting. To do this:

– Connect the vehicle diagnostic, testing and information system -VAS 5051- and then select “perform basic setting“ using the `guided function`.

5.11 Transmission, Removing

– If possible, before removing print out a diagnostic protocol for the vehicle. Affix the protocol to transmission before sending back the removed transmission.

Short Description

The transmission is remove downward by itself. The engine remains in the vehicle.

Remove the battery housing, the air filter and the engine cover. The engine with transmission are then supported so that the transmission mount can be removed.

Remove the noise insulation and the drive axles from underneath. Lower the transmission with the transmission jack.

Note

The subframe is not removed.

Special tools and workshop equipment required

- Engine-/Gearbox Jack -V.A.G 1383 A-
- Torque Wrench (40-200 Nm) -V.A.G 1332-
- Transmission Support -3282-
- Adjusting Plate -3282/36-
- Hose Clamps up to 25 mm Dia. -3094-
- Insert Tool 18 mm -T10179-
- Socket SW15 -V/175-
- Multipoint Socket -T10035-
- Engine Support Bridge -10-222 A-
- Adapter -10-222 A/13-

Procedure

– Before removing, if possible print out the diagnostic protocol for the vehicle. Affix the protocol to transmission before sending back the removed transmission in the usual way.

– Lift the vehicle.

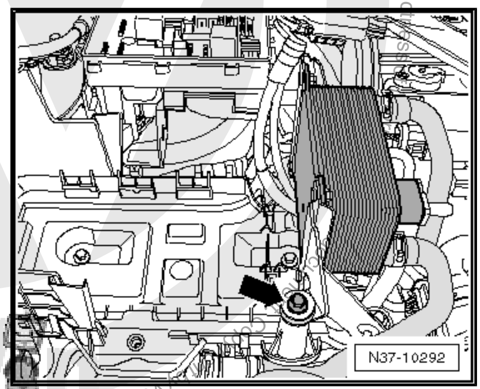
– Move the selector lever into the “P“ position.

– Remove the engine cover and the air filter with the intake duct.

– Remove the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Removal and Installation .

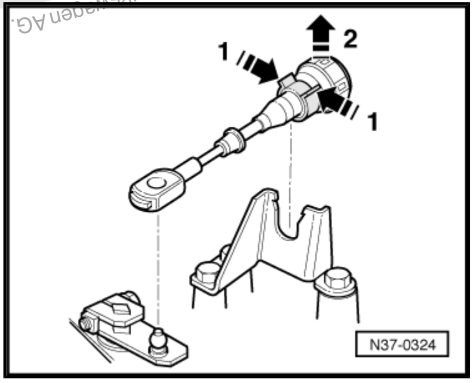
– Remove the transmission fluid cooler from the battery housing and move it to the side.

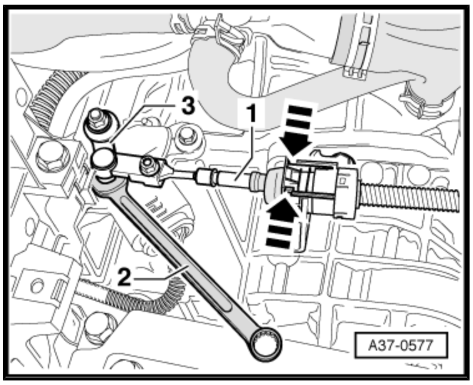
– Remove the battery housing.



– Disconnect the selector lever cable -1- from the cable bracket -2- and remove it.

Be careful not to bend the cable. Do not use pliers, otherwise the tabs on the cable bracket may break off.





- Pry the cable -1- off the lever -3- using a open end wrench -2-.
- Remove the upper wire holder from the transmission.
- Remove the lower wire holder from the transmission.
- Remove the transmission fluid pipes from the transmission.

Always replace the seals on the transmission fluid pipes.

- Disconnect the connectors from the transmission and starter.

◆ Multifunction transmission range switch

◆ Starter

◆ Ground cable from the transmission mount bracket

- Remove the bolt from the top of the starter.
- Remove the upper engine/transmission bolts.

On installation, install the bolts using the 18 mm insert tool -T10179- . Use the lower tightening specification when tightening. Refer to ⇒ “3.4 Engine to Transmission Tightening Specifications“, page 33 .

The multipoint socket -T10035- will make the assembly easier.

- Install the engine support bridge -10-222 A- and support the engine and transmission. Do not lift it.

- Remove the 2 transmission mount to bracket bolts and the 4 transmission mount bracket -A- to transmission bolts.

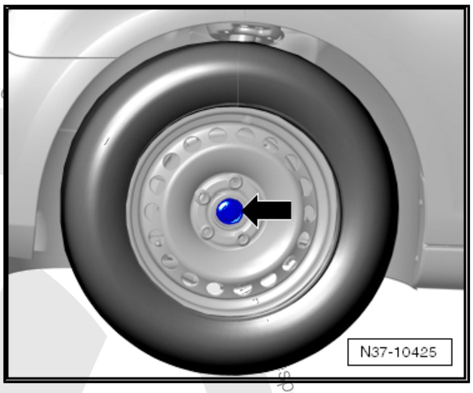
After the transmission has been lowered, the bracket -A- will be removed.

– Push the brake in order to remove the left drive axle bolts -arrow- (second technician required).

Note

Do not set the vehicle on the floor. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40 ; Removal and Installation .

– Remove the noise insulation.

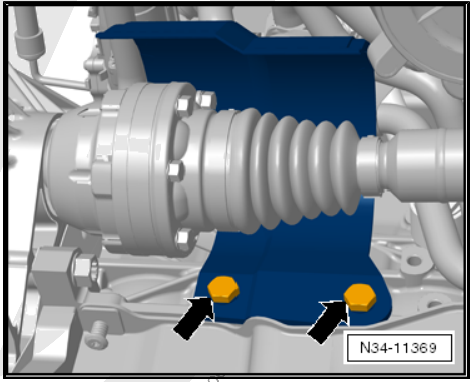


– If equipped, remove the right drive axle heat shield bolts -arrows- and shield.

– Disconnect the both connectors from the transmission.

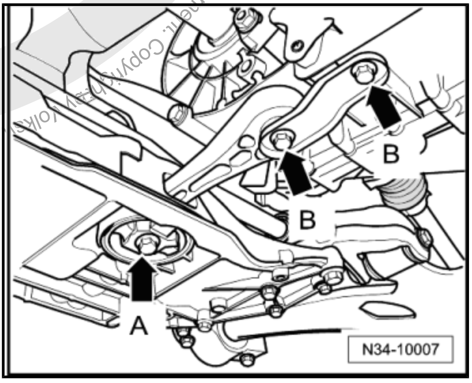
– Remove the lower section of the left wheel housing liner.

– Remove the starter. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Removal and Installation .



– Remove the pendulum support, first bolt -A-, and then bolts -B-.

When installing, First tighten bolts -B- and then tighten bolt -A-. Tightening specification. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40 ; Specifications .

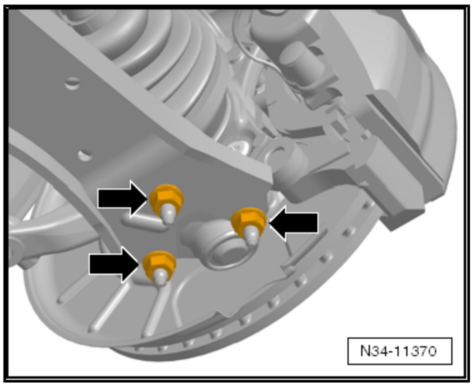


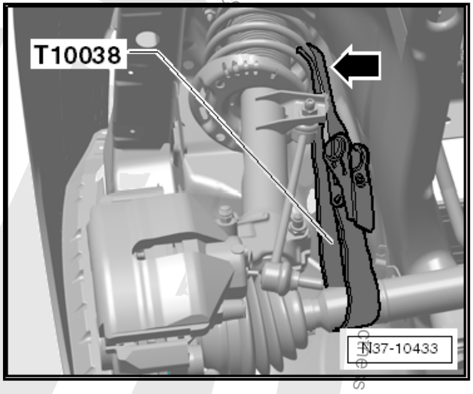
– Remove the ball joint to lower control arm nuts -arrows- on both sides.

Ball joint to control arm nut tightening specifications, refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40 ; Specifications .

– Remove both drive axles from the transmission. Refer to: ⇒ Suspension, Wheels, Steering; Rep. Gr. 40 ; Removal and Installation .

– Remove the left drive axle .





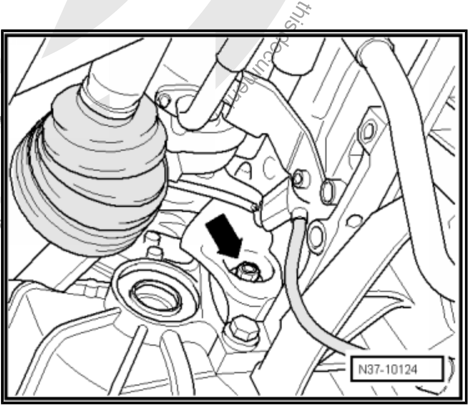
- Lift the right drive axle as far as possible and then tie it up.
- Remove the transmission mount bracket. Using the spindle on the engine support bridge -10-222 A- , lower the engine and transmission slightly.

Six turns is sufficient.

- Remove the exhaust system bracket from the transmission, if equipped.
- Remove the lower bolts between the engine and the transmission.
- Leave one easily accessible bolt for safety.
- Start with both lower bolts.

The hole for removing the converter bolts on the back of the engine is covered with a rubber plug.

- Remove this plug.



- Remove the six torque converter nuts -arrows- using the socket SW15 -V/175- .

Note

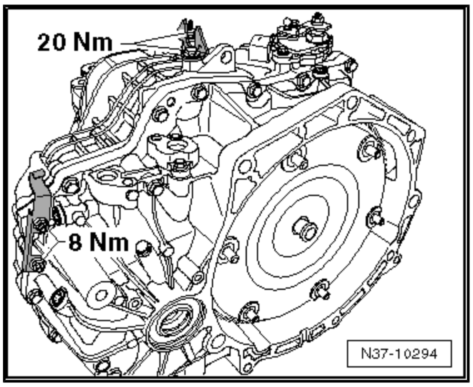
Carefully rotate the engine further!

- Support the transmission with the engine-/gearbox jack -V.A.G 1383 A- , the transmission support -3282- and the adjusting plate -3282/36- before removing the last bolt.
- Remove the last bolt.
- Separate the transmission from the engine.

Note

Pay attention to the torque converter. It must be removed together with the transmission.

- Make sure there is sufficient clearance to the subframe when lowering the transmission. If necessary, adjust the transmission support -3282- slightly afterwards.



- The cable bracket and the selector lever cable bracket must be replaced when installing a new transmission.

5.12 Transmission, Installing

- Make sure the alignment sleeves are pressed into the engine flange.
- See how the plate fits between the engine and transmission. The plate must contact the engine along entire perimeter when

pressing lightly against engine using both hands. If it is above the engine, then it is not hooked into the cylinder block correctly.

Further installation is performed in the reverse sequence.

The engine and the transmission must be mounted in the subframe mount free of tension.

For the correct tightening specifications, refer to ⇒ “3.3 Engine to Transmission Tightening Specifications“, page 32 .

– Replace all transmission mount bolts.

– First in all new bolts by hand.

When installing, secure the bracket to the transmission first. Tightening specification: 40 Nm + 90° (1/4) additional turn.

Adjust the old fit between both bolts using a screwdriver when tightening the bracket bolts to the vehicle. Tighten the two larger bolts to 60 Nm + 90° (1/4) additional turn.

– Replace the seals for the transmission fluid pipes.

– Tighten the transmission fluid pipes on the transmission. Refer to ⇒ “3.3 Engine to Transmission Tightening Specifications“, page 32 .

– Tighten both wire holders. Refer to ⇒ “3.3 Engine to Transmission Tightening Specifications“, page 32 .

– Adjust the selector lever cable. Refer to ⇒ “2.5 Selector Lever Cable, Adjusting“, page 21 .

– Check the transmission fluid level. Refer to ⇒ “1.1 Transmission Fluid Level, Checking and Filling“, page 10 .

– Perform a basic setting. To do this:

– Connect the vehicle diagnostic tester and then select “perform basic setting“ using the `guided function`.

5.13 Transmission, Removing

– If possible, before removing print out a diagnostic protocol for the vehicle. Affix the protocol to transmission before sending back the removed transmission.

Short Description:

The transmission is remove downward by itself. The engine remains in the vehicle.

Remove the battery housing, the air filter and the engine cover. The engine with transmission are then supported so that the transmission mount can be removed.

Remove the noise insulation and the drive axles from underneath. Lower the transmission with the transmission jack.

Note

The subframe is not removed.

Special tools and workshop equipment required

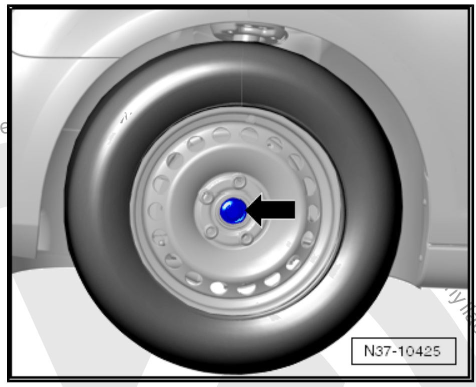
◆ Engine-/Gearbox Jack -V.A.G 1383 A-

◆ Torque Wrench -V.A.G 1332-

- Transmission Support -3282-
- Adjusting Plate -3282/36-
- Hose Clamps up to 25 mm Dia. -3094-
- Insert Tool 18 mm -T10179-
- Socket SW15 -V/175-
- Engine Support Bridge -10-222 A-
- Adapter -10-222 A/3- (Qty: 2)
- Shackle -10-222 A/12-
- Tensioning Strap -T10038-
- Wedge Tool -T10161-
- Bracket -T10346-

Procedure

- Move the selector lever into the “P“ position.
- Turn the steering wheel to the center position.
- Remove the ignition key and engage the steering wheel lock.
- Push the brake in order to remove the left drive axle bolt -arrow- (second technician required).
- Lift the vehicle.

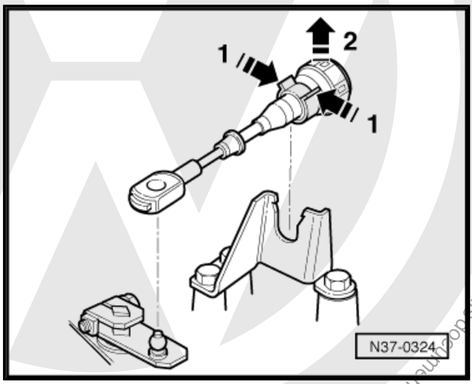


Note

Do not set the vehicle on the floor. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40 ; Removal and Installation .

- Remove the engine cover and the air filter with the intake duct.
- Remove the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Removal and Installation .
- Remove the battery housing.
- Disconnect the selector lever cable -1- from the cable bracket -2- and remove it.

Be careful not to bend the cable. Do not use pliers, otherwise the tabs on the cable bracket may break off.



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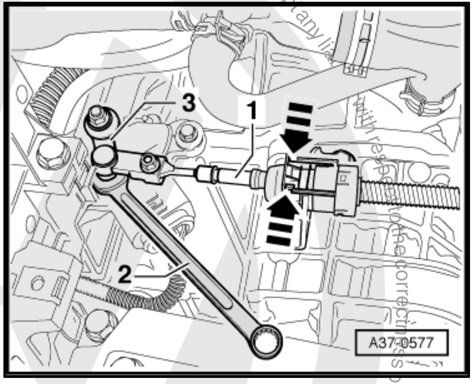
– Pry the cable -1- off the lever -3- using a open end wrench -2-.



WARNING

Steam may escape when opening the expansion tank cap. Wear protective eyewear and clothing protection to prevent eye injury and scalding. Cover the cap on the expansion tank with a cloth and open it carefully.

– Open the coolant expansion tank cap.

– Install the hose clamps up to 25 mm dia. -3094- to the hoses and remove the hoses from the transmission fluid cooler.

Always replace the seals for the transmission fluid cooler/lines.

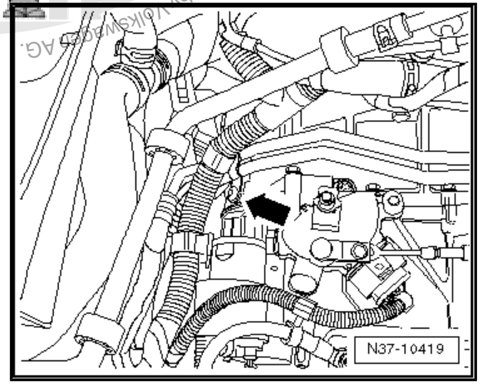
– Disconnect the connectors from the transmission and starter.

♦ Multifunction transmission range switch

♦ Starter

♦ Ground cable from the transmission mount bracket

– Remove the transmission fluid pipe -arrow- from the transmission.



– Remove the bolt from the top of the starter.

– Lift the vehicle.

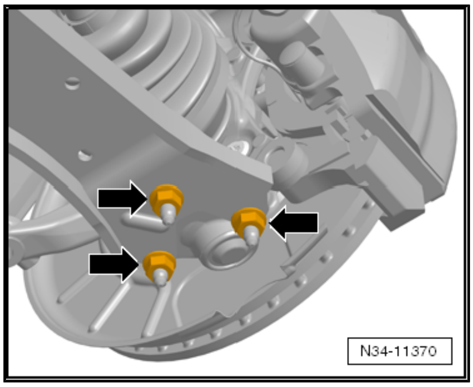
– Remove the noise insulation.

– Remove the lower section of the left wheel housing liner.

– If equipped, remove the heat shield from the engine above the right drive axle.

– Remove the vehicle level control system sensor from both control arms. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40 ; Removal and Installation .

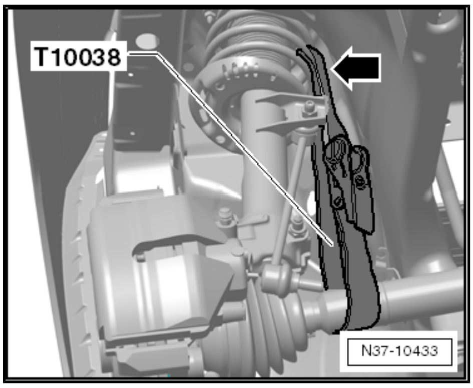
– Remove the ball joint to lower control arm nuts -arrows- on both sides.



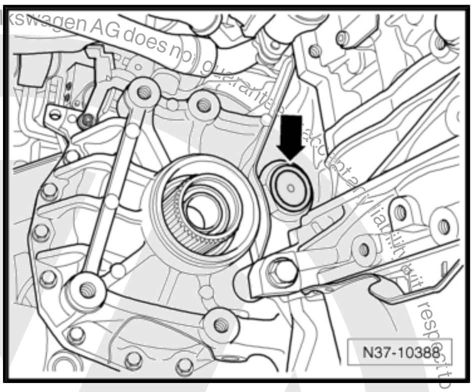
Ball joint to control arm nut tightening specifications, refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40 ; Specifications .

– Remove both drive axles from the transmission. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40 ; Removal and Installation .

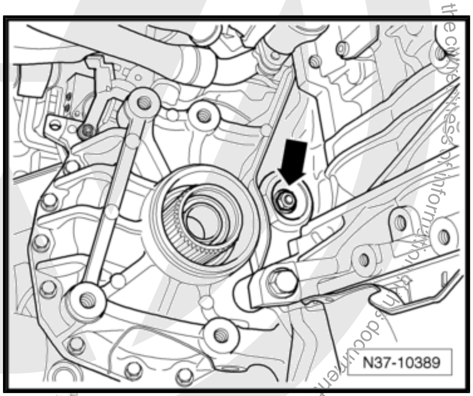
– Remove the left drive axle.



- Secure the right drive axle in this position as high as possible to the strut.
- Disconnect both connectors from the transmission.
- Remove the cable bracket from lower starter bolt.
- Remove the lower bolt from the starter and then remove the starter.
- Remove the lower bolts between the engine and the transmission.
- Leave one easily accessible bolt for safety.
- Start with both lower bolts.



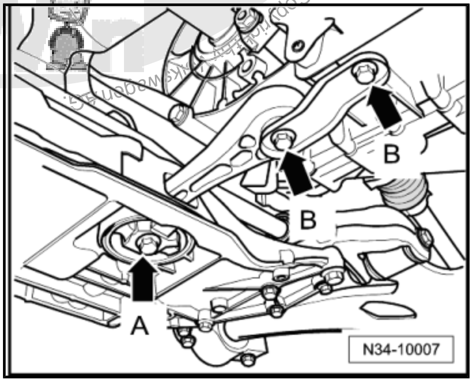
- Remove the plug -arrow-.



- Remove the six torque converter nuts -arrow- using the socket SW15 -V/175- .

Note

Carefully rotate the engine further!

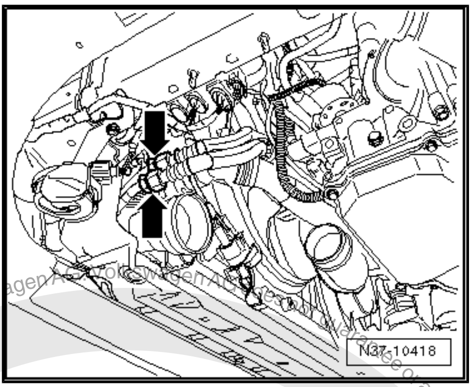


- Remove the pendulum support, first bolt -A-, and then bolts -B-.

When installing, first tighten bolts -B- and then tighten bolt -A-. Tightening specification. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40 ; Specifications .

Note

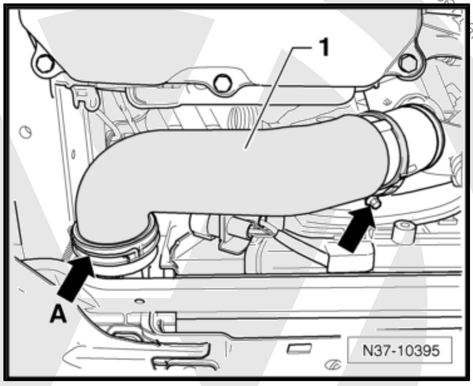
- ♦ *It is necessary to remove the transmission fluid pipes from the transmission in order to remove the upper bolts that connect the engine to the transmission. Transmission fluid will drip between the engine and the intermediate plate.*
- ♦ *To prevent that from happening, first disconnect the pipes -arrows- under the vehicle so that the fluid can run out at the bottom.*



– Lift the vehicle.

– Remove the charge air hose -1-.

– Place a drip tray under the transmission.

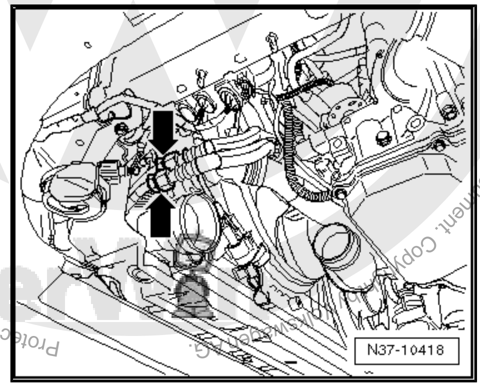


– Disconnect both transmission fluid pipes.

Keep the drip tray for workshop crane -VAS 6208- under the transmission to catch any fluid dripping out.

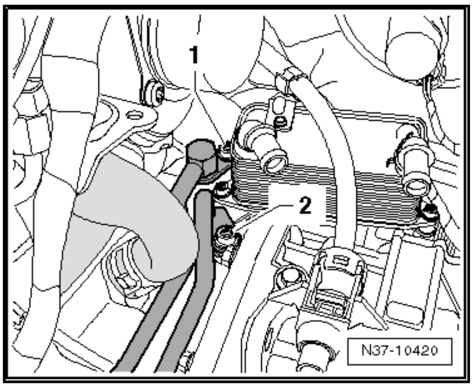
– Lower the vehicle.

– Cover the transmission fluid pipe connections and the transmission fluid cooler on the transmission with a cloth.

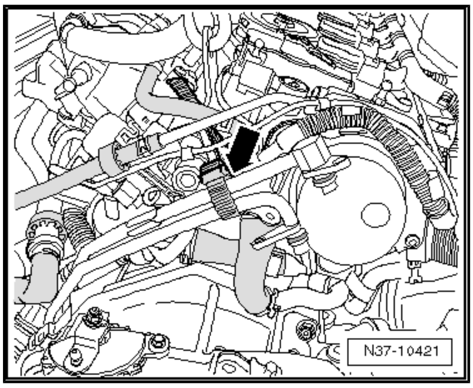


– Remove the bolts -1 and 2- but do not remove the pipes.

– Remove the pipe -2- and if possible, hold it up so that any fluid still in the pipe can drain out into the drip tray.



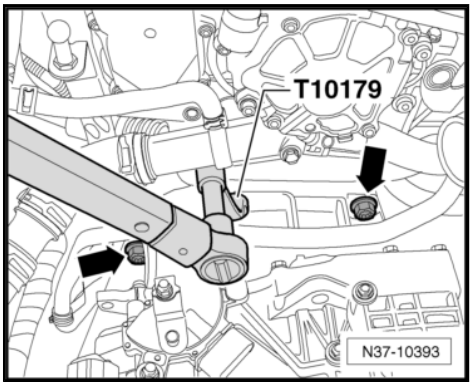
- Remove the pipe -1- and hold it up, then secure both pipes in this position using a cable tie.



Note

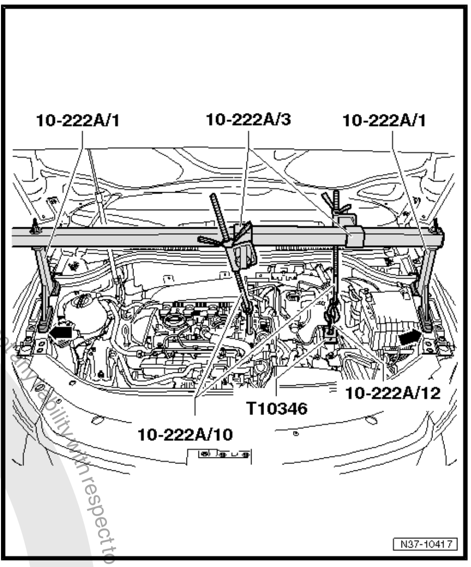
The pipes will not be removed.

- Seal the transmission fluid pipes and bores on the transmission with suitable plugs.

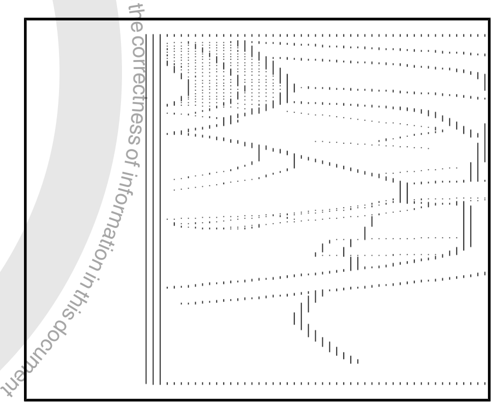


- Remove the upper engine/transmission bolts.

On installation, Install the bolts using the 18 mm insert tool -T10179- . Use the lower tightening specification when tightening. Refer to ⇒ “3.4 Engine to Transmission Tightening Specifications“, page 33 .



- Install the engine support bridge -10-222 A- and support the engine and transmission. Do not lift it.



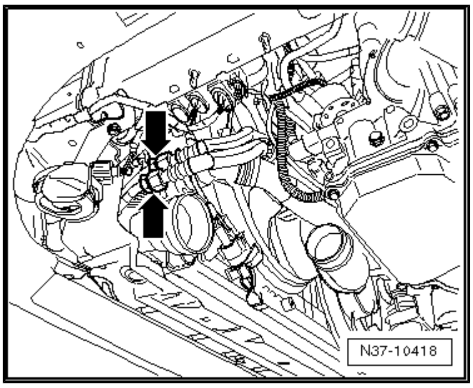
- Remove the 2 transmission mount to bracket bolts and the 4 transmission mount bracket -A- to transmission bolts.

After the transmission has been lowered, the bracket will be removed.

- Remove the transmission mount bracket. Using the spindle on the engine support bridge -10-222 A- , lower the engine and transmission slightly.

Six turns is sufficient.

- Lift the vehicle.

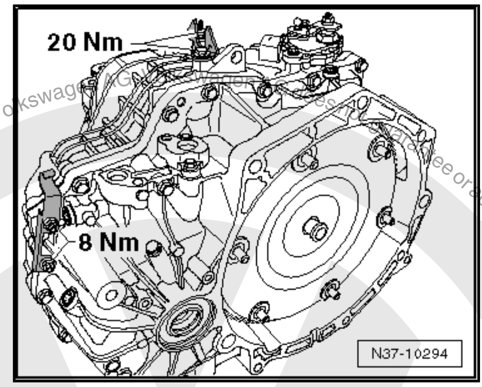


- Disconnect the transmission fluid pipes -arrows-.
- Support the transmission with the engine-/gearbox jack -V.A.G 1383 A- , the transmission support -3282- and the adjusting plate -3282 /36- before removing the last bolt.
- Remove the last bolt.
- Separate the transmission from the engine.

Note

Pay attention to the torque converter. It must be removed together with the transmission.

- Make sure there is sufficient clearance to the subframe when lowering the transmission. If necessary, adjust the transmission support -3282- slightly afterwards.
- The cable bracket and the selector lever cable bracket must be replaced when installing a new transmission.



5.14 Transmission, Installing

- Always remove any transmission fluid which has dripped out.
- Make sure the alignment sleeves are pressed into the engine flange.
- See how the plate fits between the engine and transmission. The plate must contact the engine along entire perimeter when pressing lightly against engine using both hands. If it is above the engine, then it is not hooked into the cylinder block correctly.

Further installation is performed in the reverse sequence.

The engine and the transmission must be installed to the subframe free of tension.

For the correct tightening specifications, refer to ⇒ “3.4 Engine to Transmission Tightening Specifications“, page 33 .

- Replace the transmission mount/bracket bolts.
- First, install all new bolts by hand.

When installing, first, install the bracket to the transmission.

Adjust the old fit between both bolts using a screwdriver when tightening the bracket bolts to the vehicle.

- Replace the seals for the transmission fluid pipes.
- Tighten the transmission fluid pipes to the transmission. Tightening specifications, refer to ⇒ “3.4 Engine to Transmission Tightening Specifications“, page 33 .

- Adjust the selector lever cable. Refer to ⇒ “2.5 Selector Lever Cable, Adjusting“, page 21 .
- Check the transmission fluid level. Refer to ⇒ “1.1 Transmission Fluid Level, Checking and Filling“, page 10 .
- Perform a basic setting. To do this:
- Connect the vehicle diagnostic tester and then select “perform basic setting“ using the `guided function`.

5.15 Transmission, Removing

- If possible, before removing print out the diagnostic protocol for the vehicle. Affix the protocol to transmission before sending back the removed transmission.

Short Description

The transmission is remove downward by itself. The engine remains in the vehicle.

Remove the battery housing, the air filter and the engine cover. The engine with transmission are then supported so that the transmission mount can be removed.

Remove the noise insulation and the drive axles from underneath. Lower the transmission with the transmission jack.

Note

The subframe is not removed.

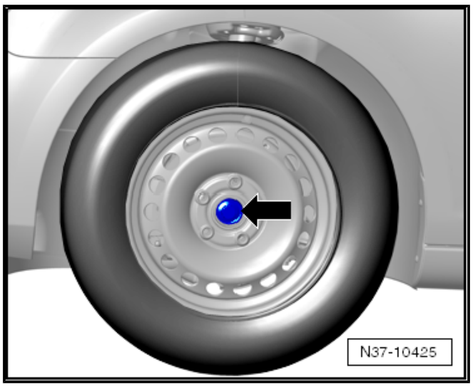
Special tools and workshop equipment required

- Engine-/Gearbox Jack -V.A.G 1383 A-
- Socket SW15 -V/175-
- Transmission Support -3282-
- Wedge Tool -T10161-
- Torque Wrench (40-200 Nm) -V.A.G 1332-
- Adjusting Plate -3282/36-
- Engine Support Bridge -10-222 A-
- Engine Support Feet -10-222 A/8-
- Adapter -10-222 A/7-
- Bracket with Spindle and Hook -10-222 A/10-
- Engine Support Adapter -10-222 A/3-
- Shackle -10-222 A/12-
- Hose Clip Pliers -V.A.G 1921-

Procedure

- Move the selector lever into the “P“ position.
- Lift the vehicle, all 4 lift points of the hoist are at the same height.

– Push the brake pedal in order to remove the left drive axle bolt -arrow- (second technician required).

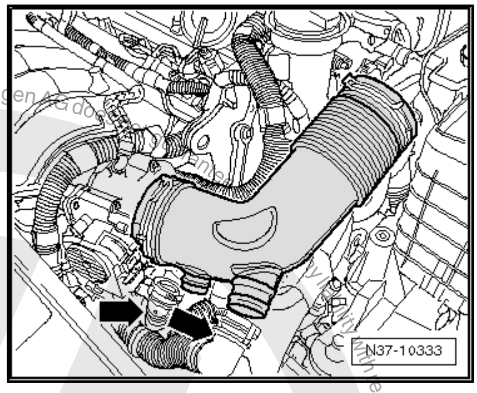


Note

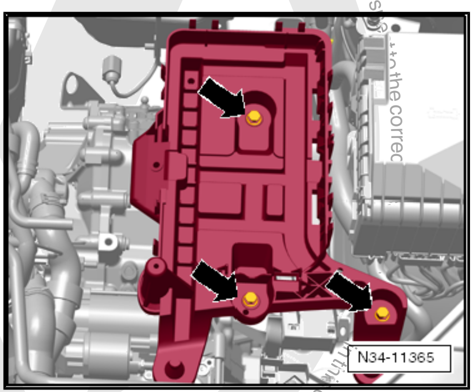
Do not set the vehicle on the floor.

– Remove the engine cover/air filter.

– Disconnect the hoses -arrows- and remove the intake tube from the throttle valve.

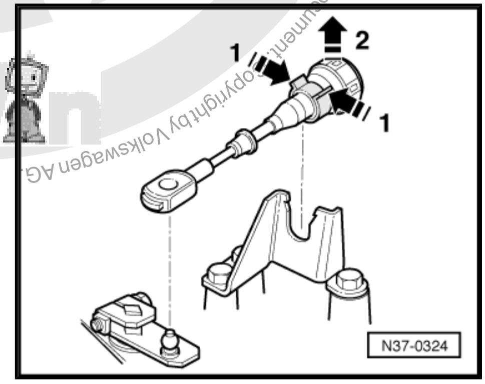


– Remove the battery and battery housing. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Removal and Installation .



– Disconnect the selector lever cable -1- from the cable bracket -2- and remove it.

Be careful not to bend the cable. Do not use pliers, otherwise the tabs on the cable bracket may break off.

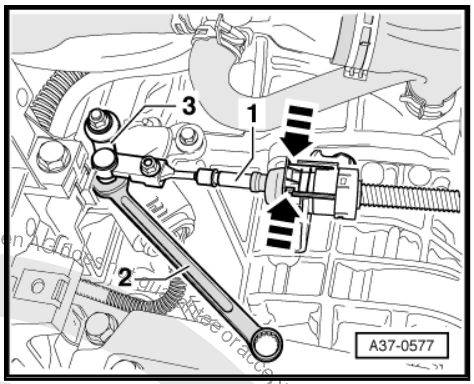


- Pry the cable -1- off the lever -3- using a open end wrench -2-.
- Disconnect the connectors from the transmission and starter.

♦ Multifunction transmission range switch

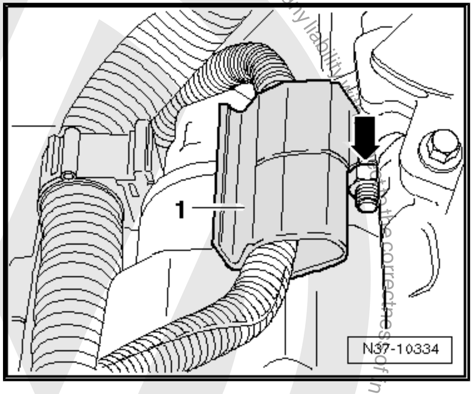
♦ Starter

♦ Ground cable from the transmission mount bracket

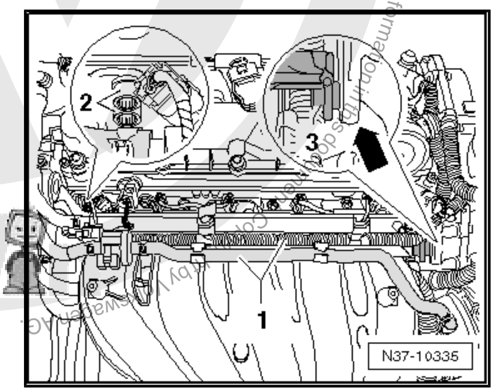


- Remove the cable bracket -1- from the starter stud bolt -arrow-.
- Remove the bolt from the top of the starter.
- Remove the upper engine/transmission bolts.

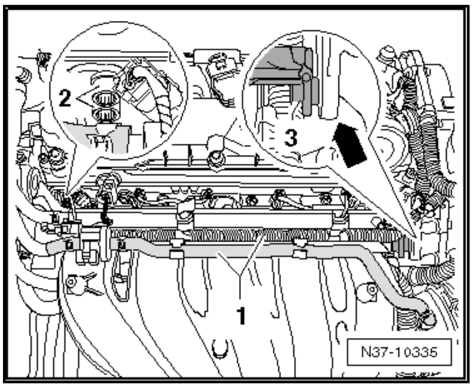
So that engine and transmission can be supported:



- Remove the lines -1- from the transport strap -3-.



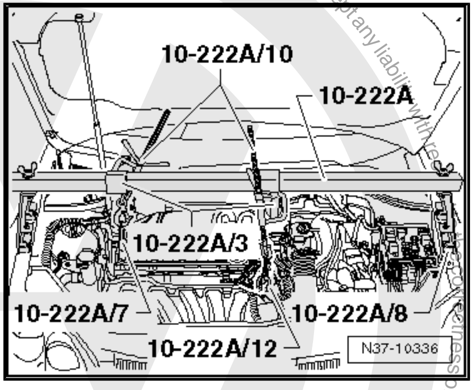
- Remove the transport strap -3- from the engine -2- and pull it out of the lifting eye -arrow-.
- Attach one shackle -10-222 A/12- to this lifting eye.



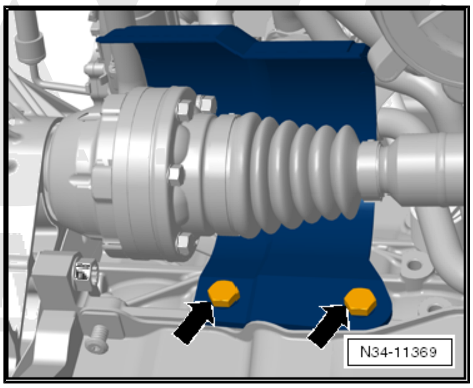
- Install the engine support bridge -10-222 A- .
- Extend the right bracket with spindle and hook -10-222 A/10- with the adapter -10-222 A/7- .

The hook points downward and will be engaged on the cylinder block later.

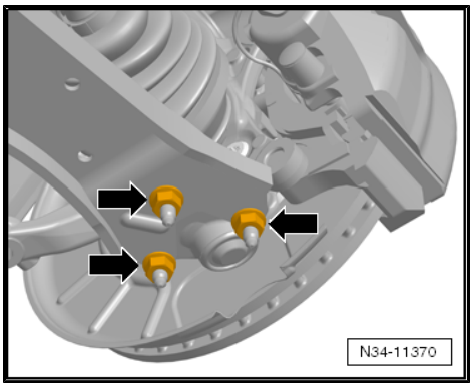
- Remove the noise insulation.
- Remove the lower section of the left wheel housing liner.


10-222A/10
10-222A
10-222A/3
10-222A/7
10-222A/8
10-222A/12
N37-10336

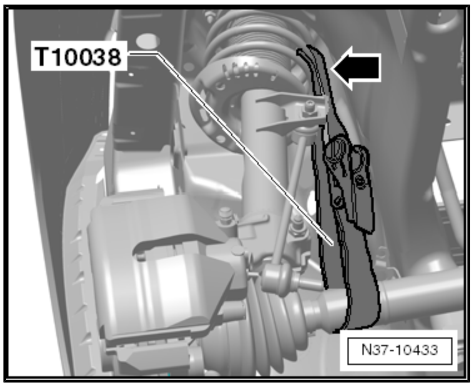
- Remove the right drive axle heat shield bolts -arrows- and heat shield.



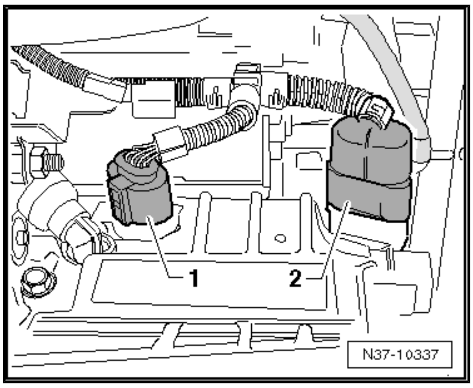
- Remove the ball joint to lower control arm nuts -arrows- on both sides.
- Remove both drive axles from the transmission. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40 ; Removal and Installation .
- Remove the left drive axle from the vehicle.



- Lift the right drive axle as far as possible and then secure it using, for example a tensioning strap.


T10038
N37-10433

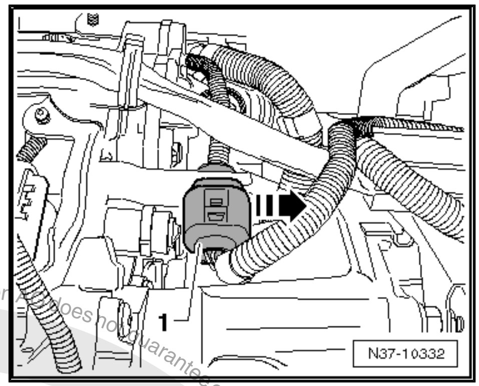
– Disconnect the connectors -1 and 2- from the transmission.



– Remove the connector from the bracket under the starter -1- and then disconnect it.

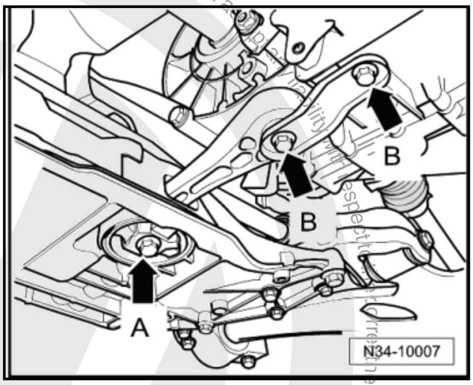
– Remove the bracket from the lower bolt for starter.

– Remove the lower bolt from the starter and then remove the starter.

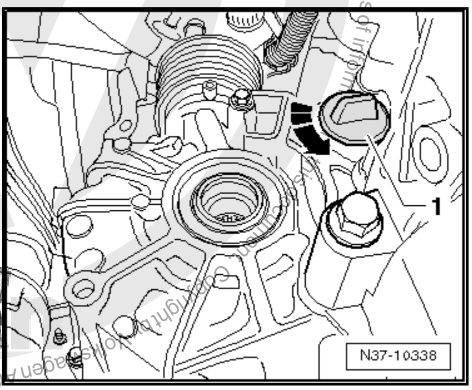


– Remove the pendulum support, first bolt -A-, and then bolts -B-.

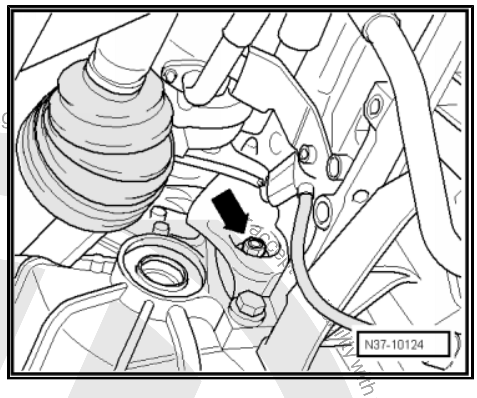
– Drain the coolant.



– Turn the cap -1- in the -direction of the arrow- and remove it.



– Remove the six torque converter nuts -arrows- using the socket SW15 -V/175- .



Note

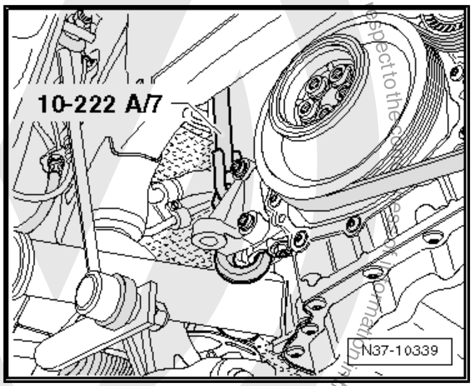
Carefully rotate the engine further!

– Engage the adapter -10-222 A/7- to the cylinder block.

– Remove the coolant hoses from the transmission fluid cooler.

Tension the right spindle one turn (more turns are not necessary).

– Support the engine and transmission with the left spindle. Do not lift it.



– Remove the transmission mount bracket -A-.

– Turn the left spindle on the engine support bridge -10-222 A- and slightly lower the engine and transmission.

Six turns is sufficient.

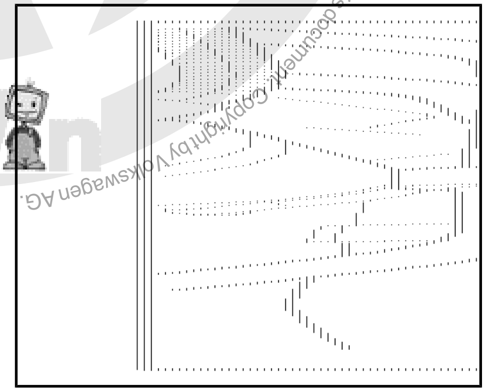
– Remove the lower bolts between the engine and the transmission.

– Leave one easily accessible bolt for safety.

– Support the transmission with the engine-/gearbox jack -V.A.G 1383 A- , the transmission support -3282- and the adjusting plate -3282 /36- before removing the last bolt.

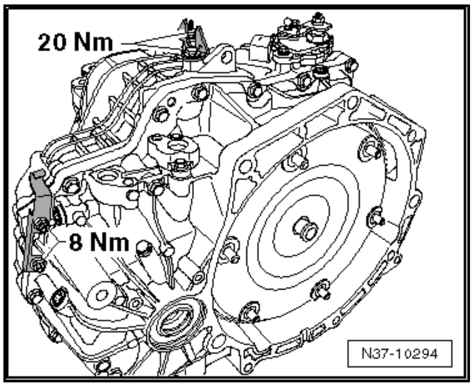
– Remove the last bolt.

– Separate the transmission from the engine.



Note

- *Pay attention to the torque converter. It must be removed together with the transmission.*
- *The cable bracket and the selector lever cable bracket must be replaced when installing a new transmission.*



5.16 Transmission, Installing

– Make sure the alignment sleeves are pressed into the engine flange.

– See how the plate fits between the engine and transmission. The plate must contact the engine along entire perimeter when pressing lightly against engine using both hands. If it is above the engine, then it is not hooked into the cylinder block correctly.

Further installation is performed in the reverse sequence.

The engine and the transmission must be installed to the subframe free of tension.

– Replace all transmission mount bolts.

– First, install all the new bolts by hand.

When installing, secure the transmission mount bracket to the transmission first. Tightening specification: 40 Nm + 90° (1/4) additional turn.

Adjust the old fit between both bolts using a screwdriver when tightening the bracket bolts to the vehicle. Tighten the two larger bolts to 60 Nm + 90° (1/4) additional turn.

Tightening specifications, transmission to engine. Refer to ⇒ “3.5 Engine to Transmission Tightening Specifications“, page 35 .

– Adjust the selector lever cable. Refer to ⇒ “2.5 Selector Lever Cable, Adjusting“, page 21 .

– Check the transmission fluid level. Refer to ⇒ “1.1 Transmission Fluid Level, Checking and Filling“, page 10 .

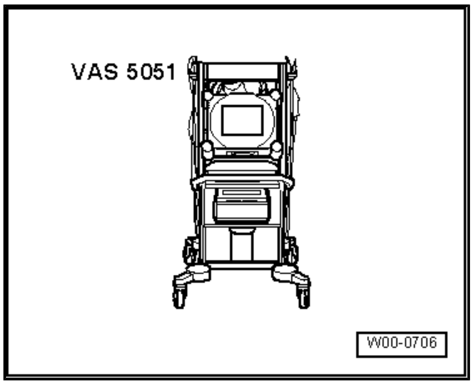
– Perform a basic setting. To do this:

– Connect the vehicle diagnostic tester and then select “perform basic setting“ using the `guided function`.

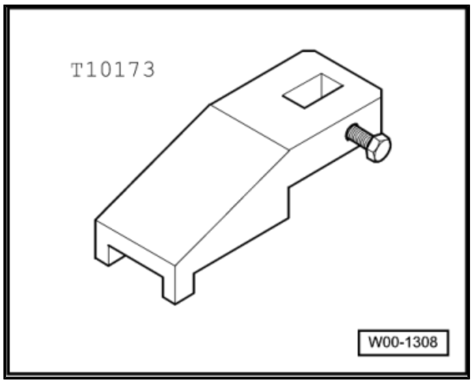
6 Special Tools

Special tools and workshop equipment required

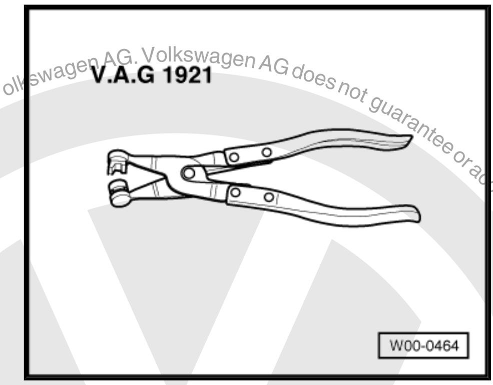
- Hose Clamp Pliers -V.A.G 1275-
- Vehicle Diagnosis, Testing and Information System -VAS 5051-


VAS 5051
W00-0706

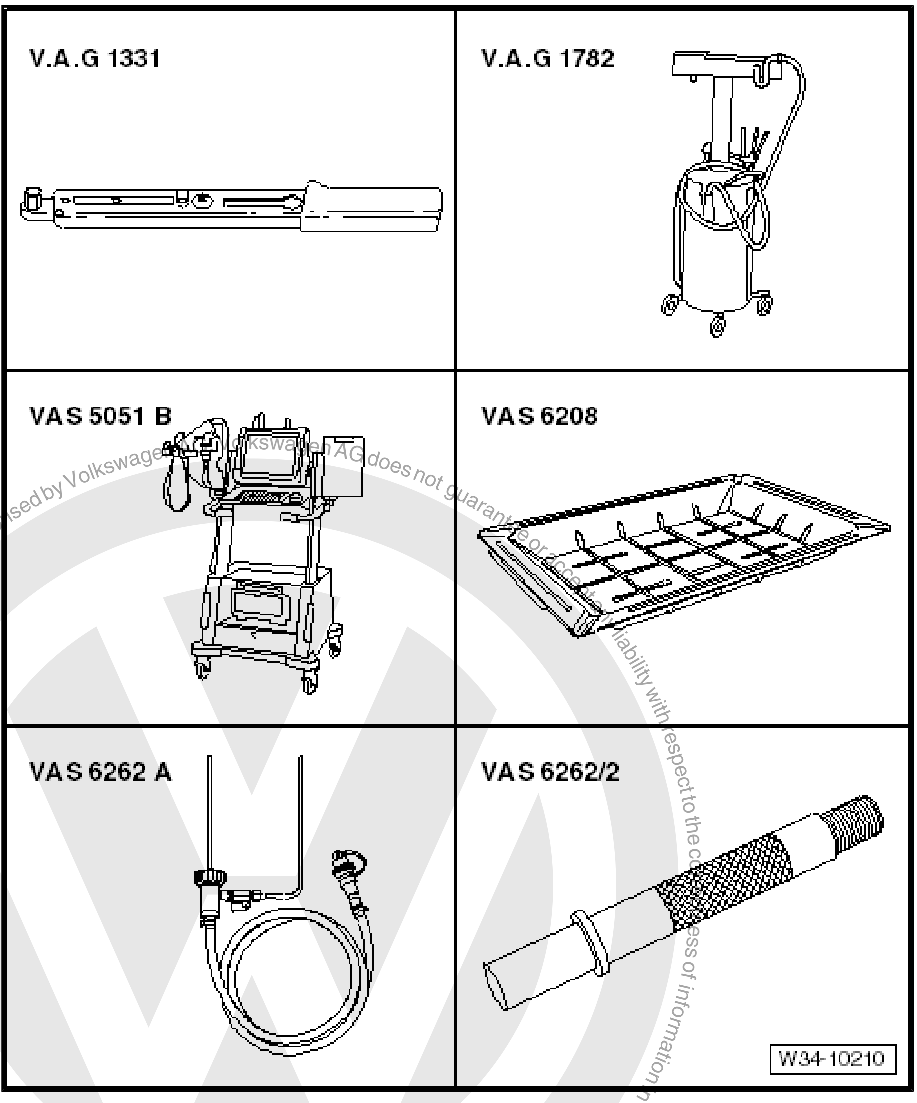
- Setting Gauge -T10173-


T10173
W00-1308

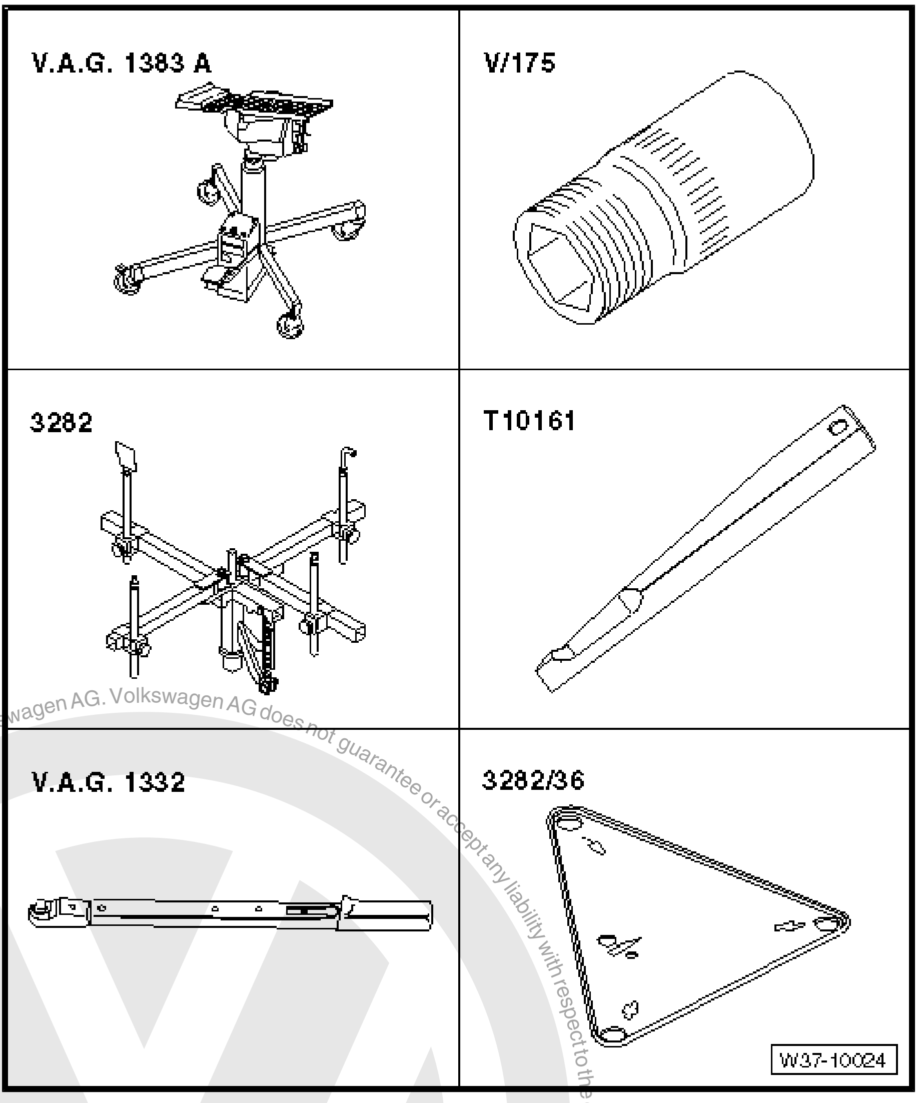
- Hose Clip Pliers -V.A.G 1921-


V.A.G 1921
W00-0464

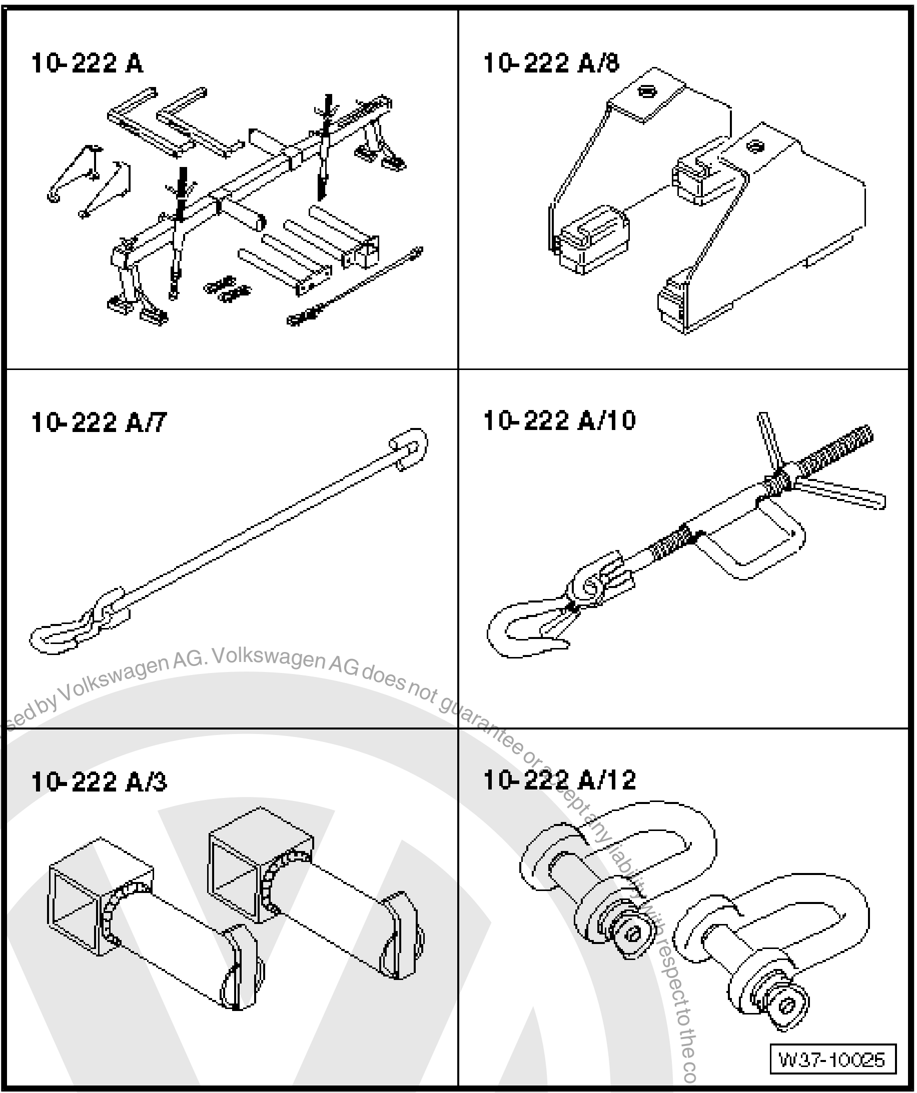
- Torque Wrench (5-50 Nm) -V.A.G 1331-
- Used Oil Collecting and Extracting Device -V.A.G 1782-
- Vehicle Diagnosis, Testing and Information System -VAS 5051-
- Drip Tray for VAS 6100 -VAS 6208-
- Adapter for Oil Filling -VAS 6262 A-
- Adapter for Filling ATF Oil -VAS 6262/2-


V.A.G 1331
V.A.G 1782
VAS 5051 B
VAS 6208
VAS 6262 A
VAS 6262/2
W34-10210

- Engine-/GearboxJjack -V.A.G 1383 A-
- Socket SW15 -V/175-
- Transmission Support -3282-
- Wedge Tool -T10161-
- Torque Wrench (40-200 Nm) -V.A.G 1332-
- Adjusting Plate -3282/36-


V.A.G. 1383 A
V/175
3282
T10161
V.A.G. 1332
3282/36
W37-10024

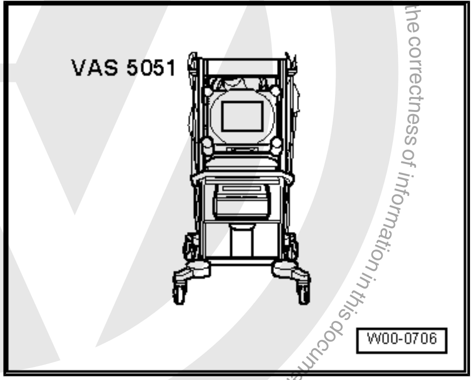
- Engine Support Bridge -10-222 A-
- Engine Support Feet -10-222 A/8-
- Adapter -10-222 A/7-
- Bracket with Spindle and Hook -10-222 A/10-
- Engine Support Adapter -10-222 A/3-
- Shackle -10-222 A/12-


10-222 A
10-222 A/8
10-222 A/7
10-222 A/10
10-222 A/3
10-222 A/12
W37-10025

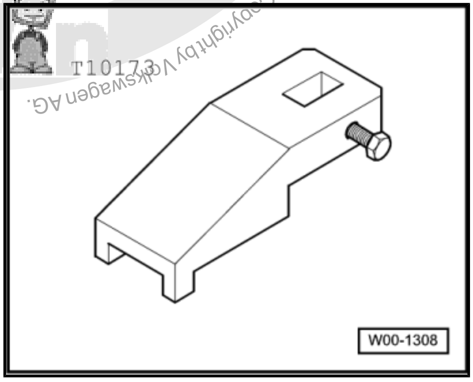
7 Special Tools

Special tools and workshop equipment required

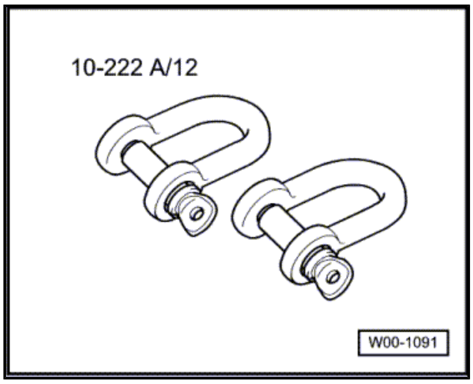
- ♦ Hose Clamp Pliers -V.A.G 1275-
- ♦ Adapter -10-222 A/13-
- ♦ Vehicle Diagnosis, Testing and Information System -VAS 5051-


VAS 5051
W00-0706

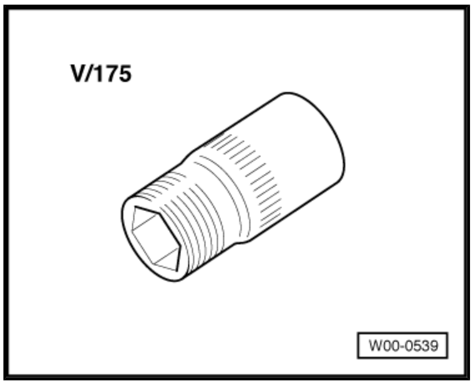
- ♦ Setting Gauge -T10173-


T10173
W00-1308

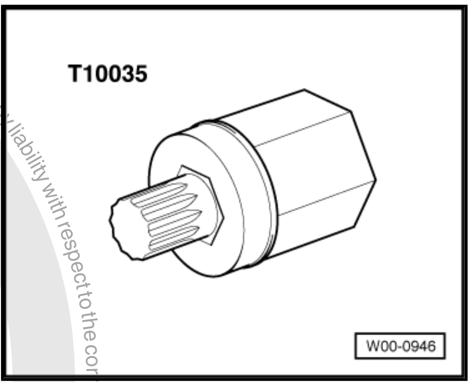
- ♦ Shackle -10 - 222 A/12-


10-222 A/12
W00-1091

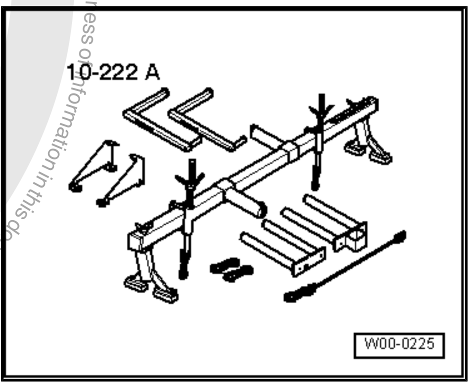
- ♦ Socket SW15 -V/175-


V/175
W00-0539

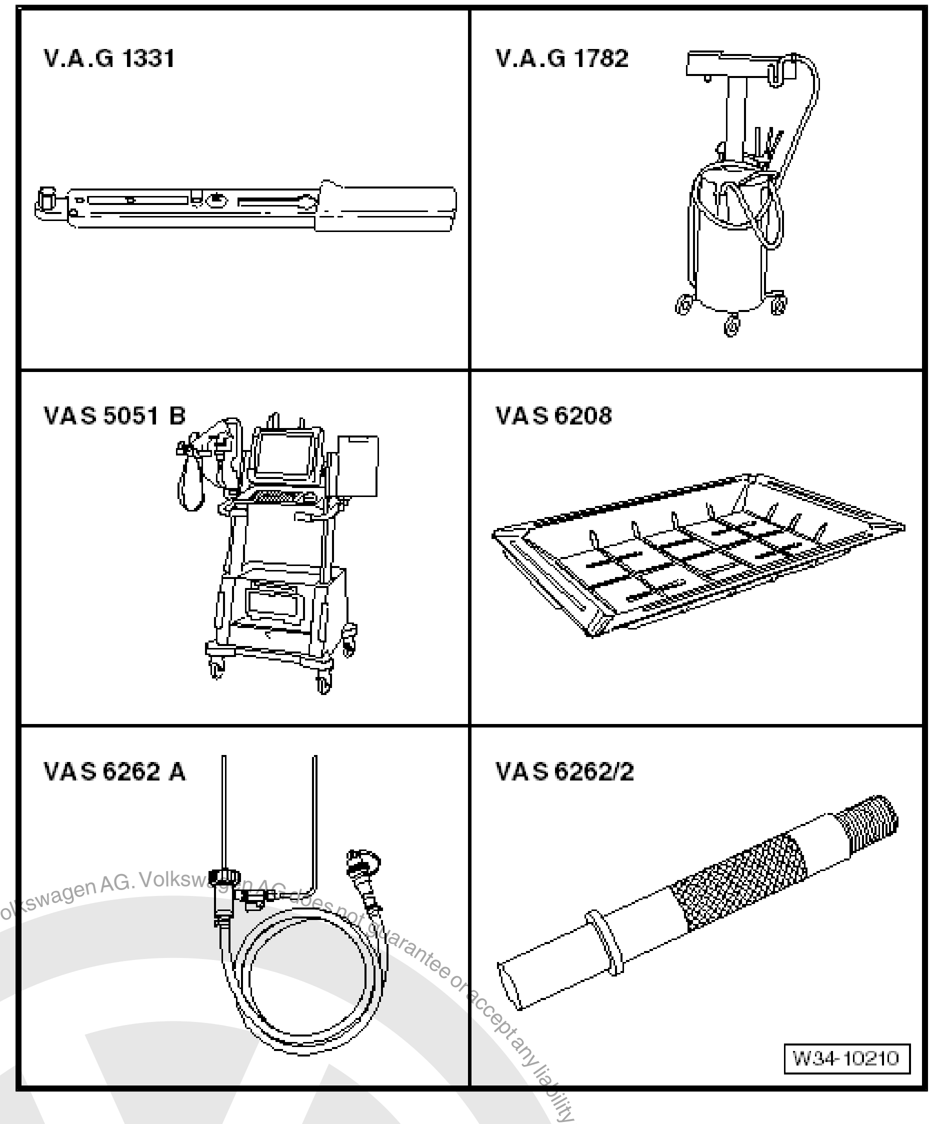
- Multipoint Socket -T10035-


T10035
W00-0946

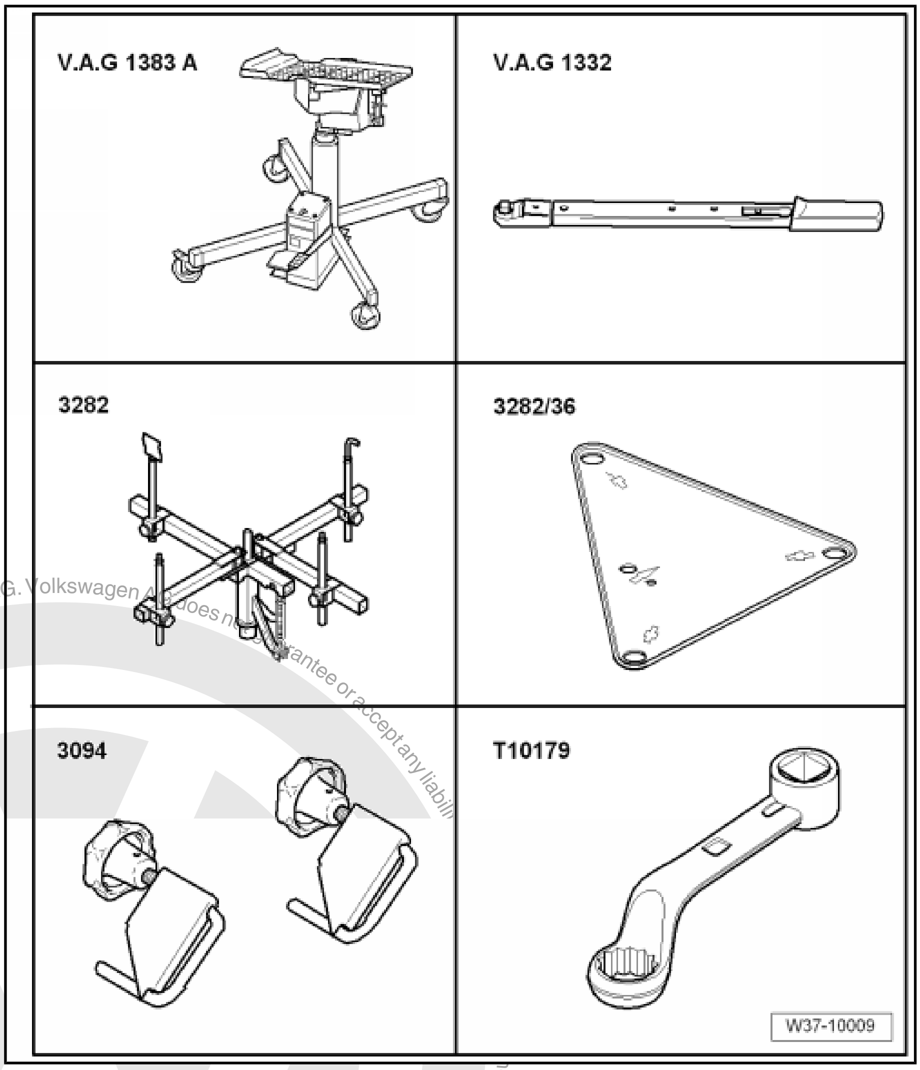
- Engine Support Bridge -10-222 A-


10-222 A
W00-0225

- Torque Wrench (5-50 Nm) - V.A.G 1331-
- Used Oil Collecting and Extracting Device -V.A.G 1782-
- Vehicle Diagnosis, Testing and Information System - VAS 5051-
- Drip Tray for VAS 6100 - VAS 6208-
- Adapter for Oil Filling -VAS 6262 A-
- Adapter for Filling ATF Oil - VAS 6262/2-


V.A.G 1331
V.A.G 1782
VAS 5051 B
VAS 6208
VAS 6262 A
VAS 6262/2
W34-10210

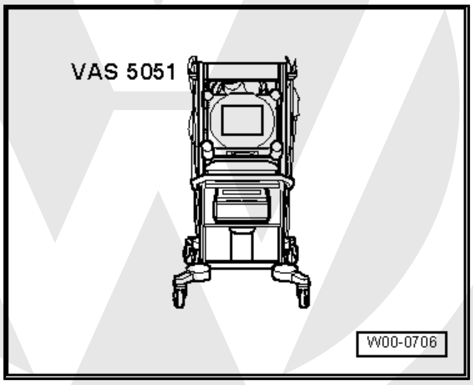
- Engine-/Gearbox Jack -V.A.G 1383 A-
- Torque Wrench (40-200 Nm) -V.A.G 1332-
- Transmission Support -3282-
- Adjusting Plate -3282/36-
- Hose Clamps up to 25 mm Dia. -3094-
- Insert Tool 18 mm -T10179-


V.A.G 1383 A
V.A.G 1332
3282
3282/36
3094
T10179
W37-10009

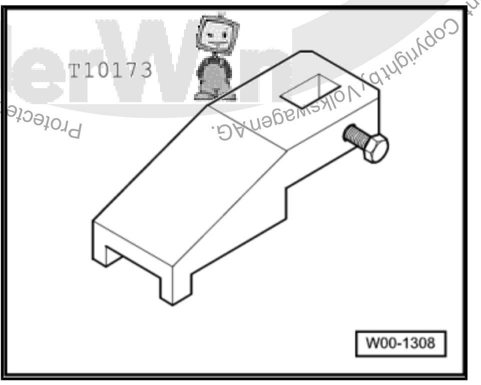
8 Special Tools

Special tools and workshop equipment required

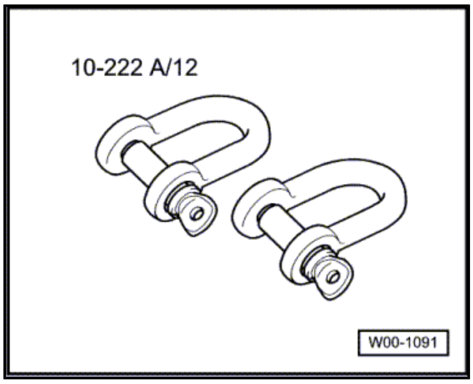
- Hose Clamp Pliers -V.A.G 1275-
- Adapter -10-222 A/3-
- Shackle -10-222 A/12-
- Tensioning Strap -T10038-
- Wedge Tool -T10161-
- Bracket -T10346-
- Vehicle Diagnosis, Testing and Information System -VAS 5051-


VAS 5051
W00-0706

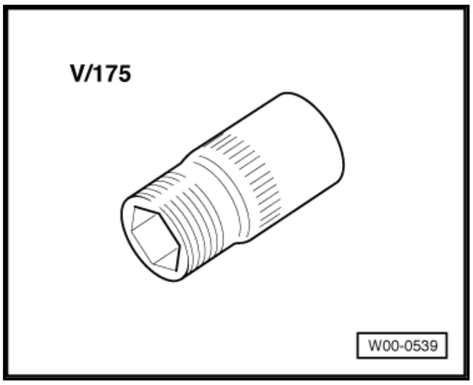
- Setting Gauge -T10173-


T10173
W00-1308

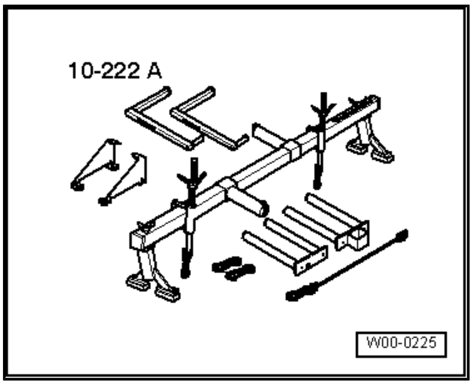
- Shackle -10 - 222 A/12-


10-222 A/12
W00-1091

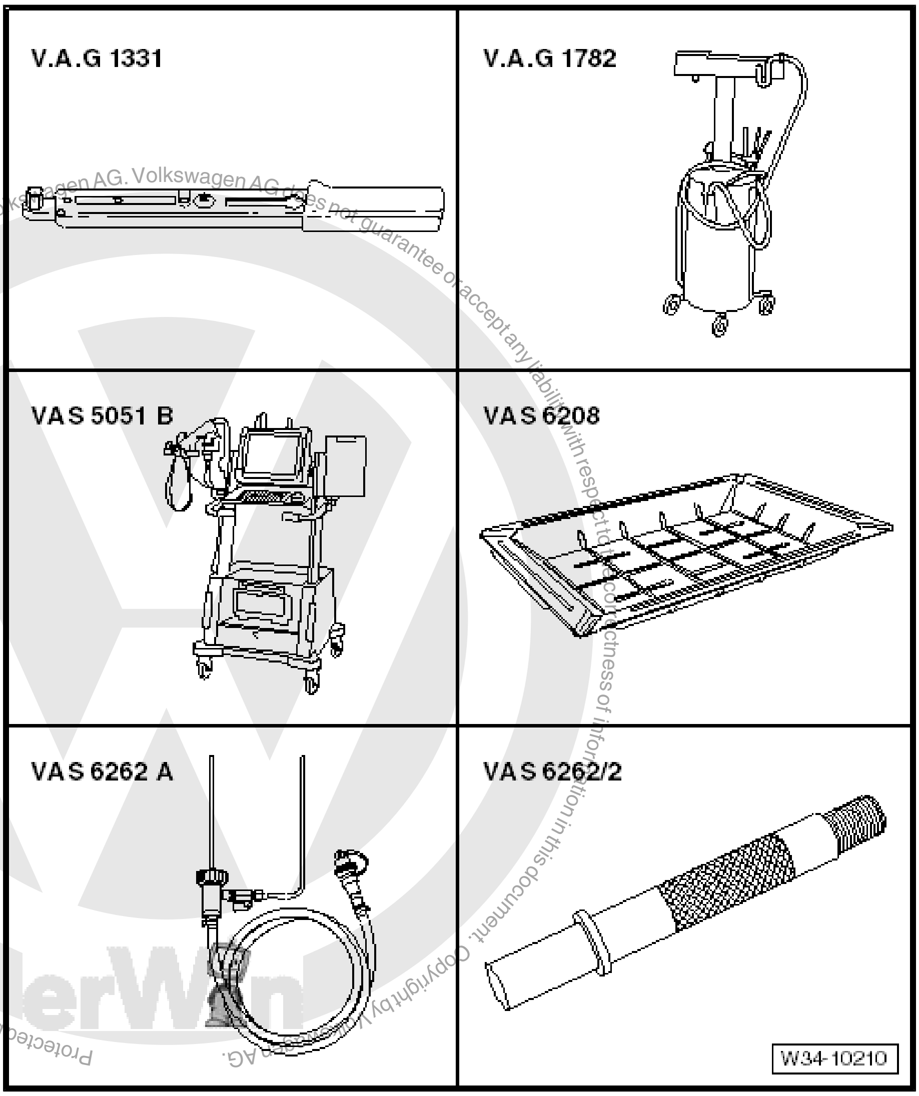
- Socket SW15 -V/175-


V/175
W00-0539

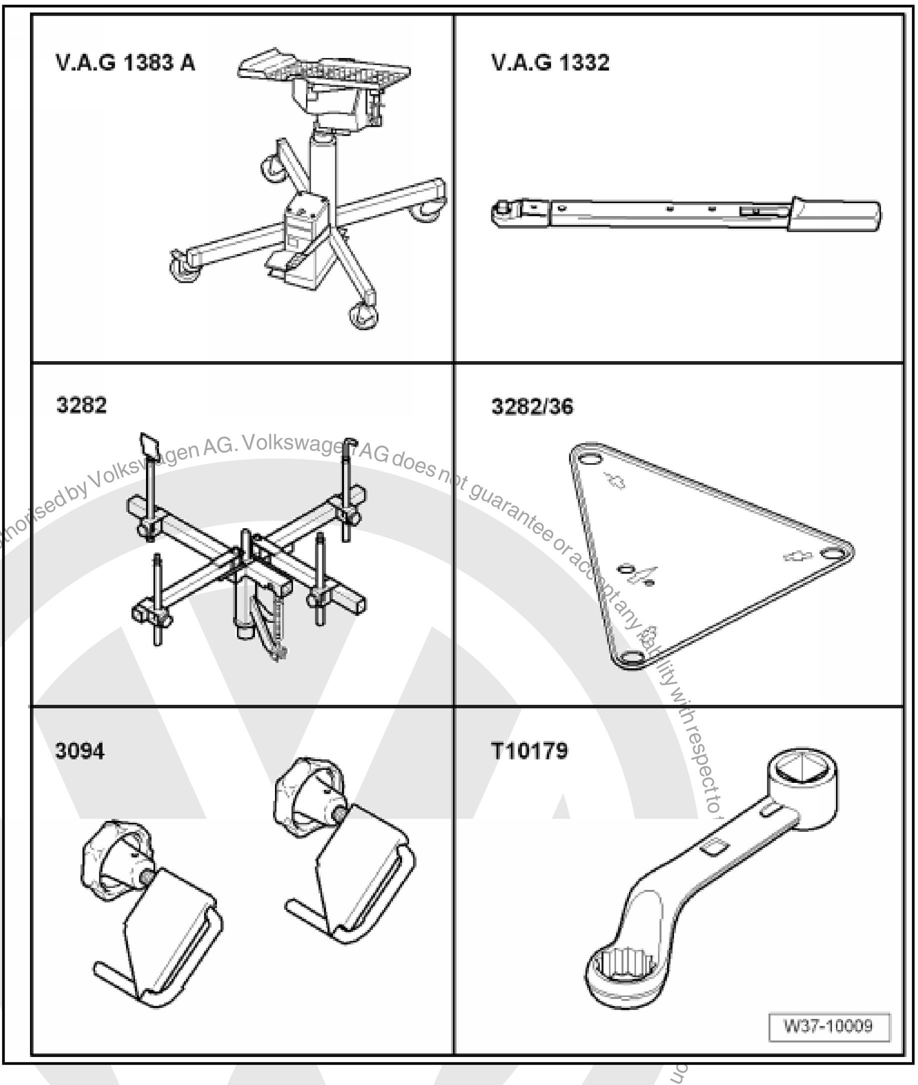
- Engine Support Bridge -10-222 A-


10-222 A
W00-0225

- Torque Wrench (5-50 Nm) -V.A.G 1331-
- Used Oil Collecting and Extracting Device -V.A.G 1782-
- Vehicle Diagnosis, Testing and Information System -VAS 5051-
- Drip Tray for VAS 6100 -VAS 6208-
- Adapter for Oil Filling -VAS 6262 A-
- Adapter for Filling ATF Oil -VAS 6262/2-


V.A.G 1331
V.A.G 1782
VAS 5051 B
VAS 6208
VAS 6262 A
VAS 6262/2
W34-10210

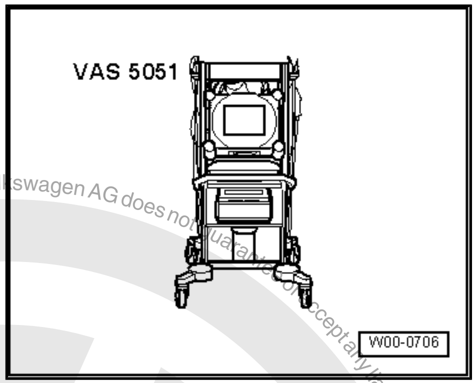
- Engine-/Gearbox Jack -V.A.G 1383 A-
- Torque Wrench -V.A.G 1332-
- Transmission Support -3282-
- Adjusting Plate -3282/36-
- Hose Clamps up to 25 mm Dia. -3094-
- Insert Tool 18 mm -T10179-


V.A.G 1383 A
V.A.G 1332
3282
3282/36
3094
T10179
W37-10009

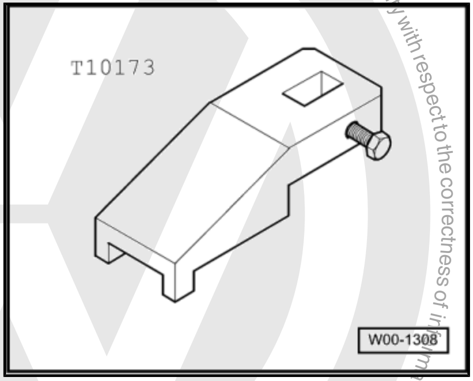
9 Special Tools

Special tools and workshop equipment required

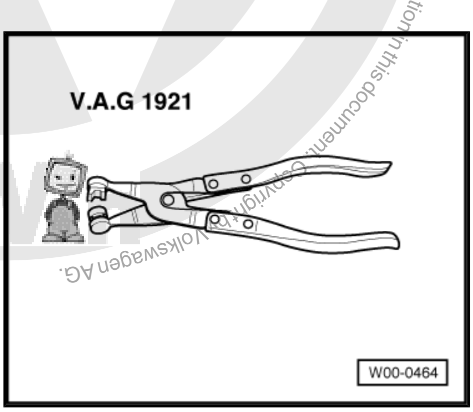
- Hose Clamp Pliers -V.A.G 1275-
- Vehicle Diagnosis, Testing and Information System -VAS 5051-


VAS 5051
W00-0706

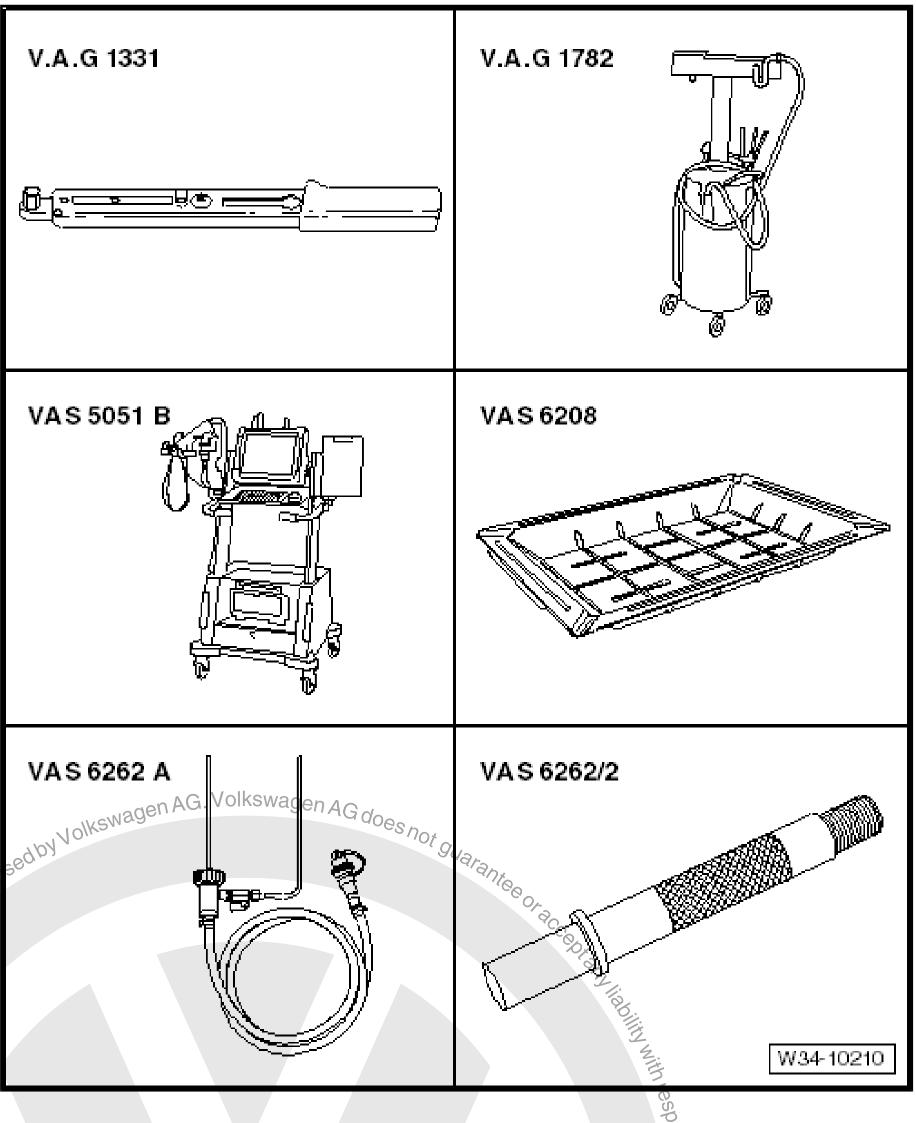
- Setting Gauge -T10173-


T10173
W00-1308

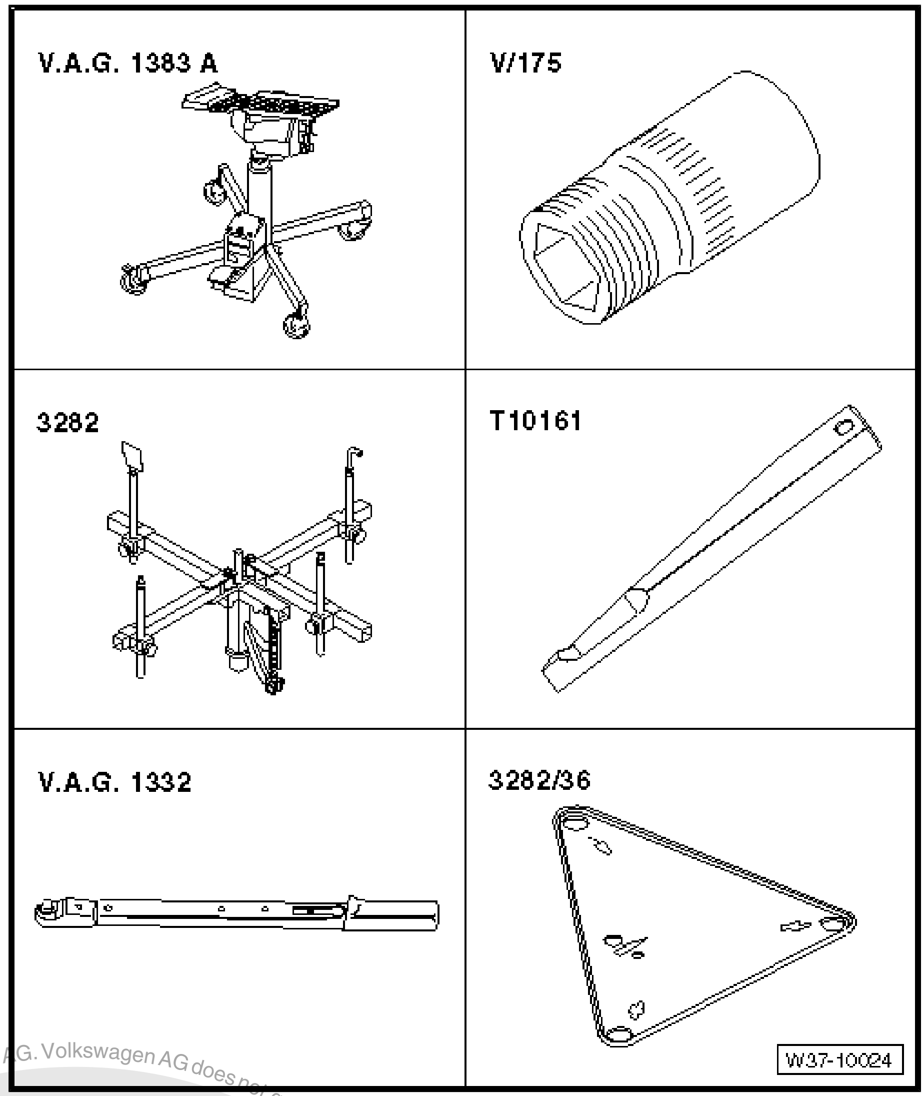
- Hose Clip Pliers -V.A.G 1921-


V.A.G 1921
W00-0464

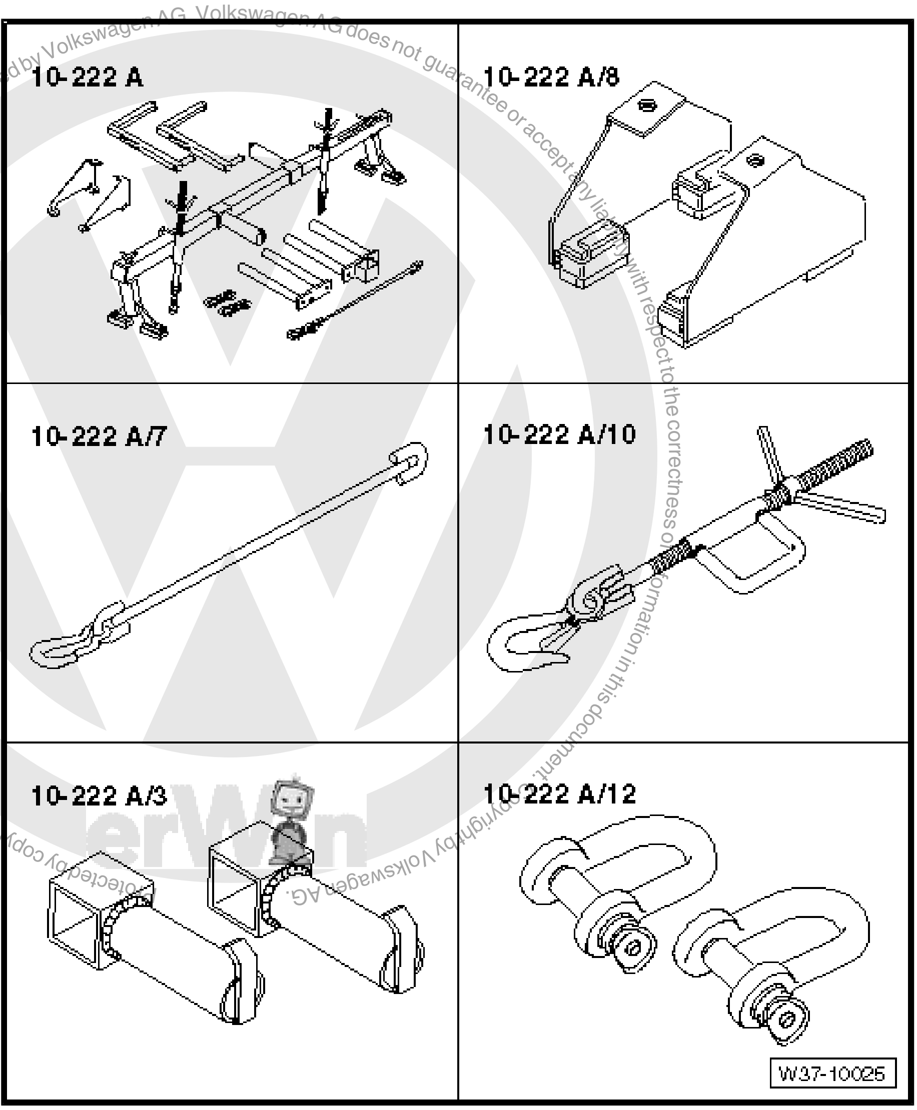
- Torque Wrench (5-50 Nm) -V.A.G 1331-
- Used Oil Collecting and Extracting Device -V.A.G 1782-
- Vehicle Diagnosis, Testing and Information System -VAS 5051-
- Drip Tray for VAS 6100 -VAS 6208-
- Adapter for Oil Filling -VAS 6262 A-
- Adapter for Filling ATF Oil -VAS 6262/2-


V.A.G 1331
V.A.G 1782
VAS 5051 B
VAS 6208
VAS 6262 A
VAS 6262/2
W34-10210

- Engine-/Gearbox Jack - V.A.G 1383 A-
- Socket SW15 -V/175-
- Transmission Support -3282-
- Wedge Tool -T10161-
- Torque Wrench (40-200 Nm) -V.A.G 1332-
- Adjusting Plate -3282/36-


V.A.G. 1383 A
V/175
3282
T10161
V.A.G. 1332
3282/36
W37-10024

- Engine Support Bridge -10-222 A-
- Engine Support Feet -10-222 A/8-
- Adapter -10-222 A/7-
- Bracket with Spindle and Hook -10-222 A/10-
- Engine Support Adapter -10-222 A/3-
- Shackle -10-222 A/12-


10-222 A
10-222 A/8
10-222 A/7
10-222 A/10
10-222 A/3
10-222 A/12
W37-10025

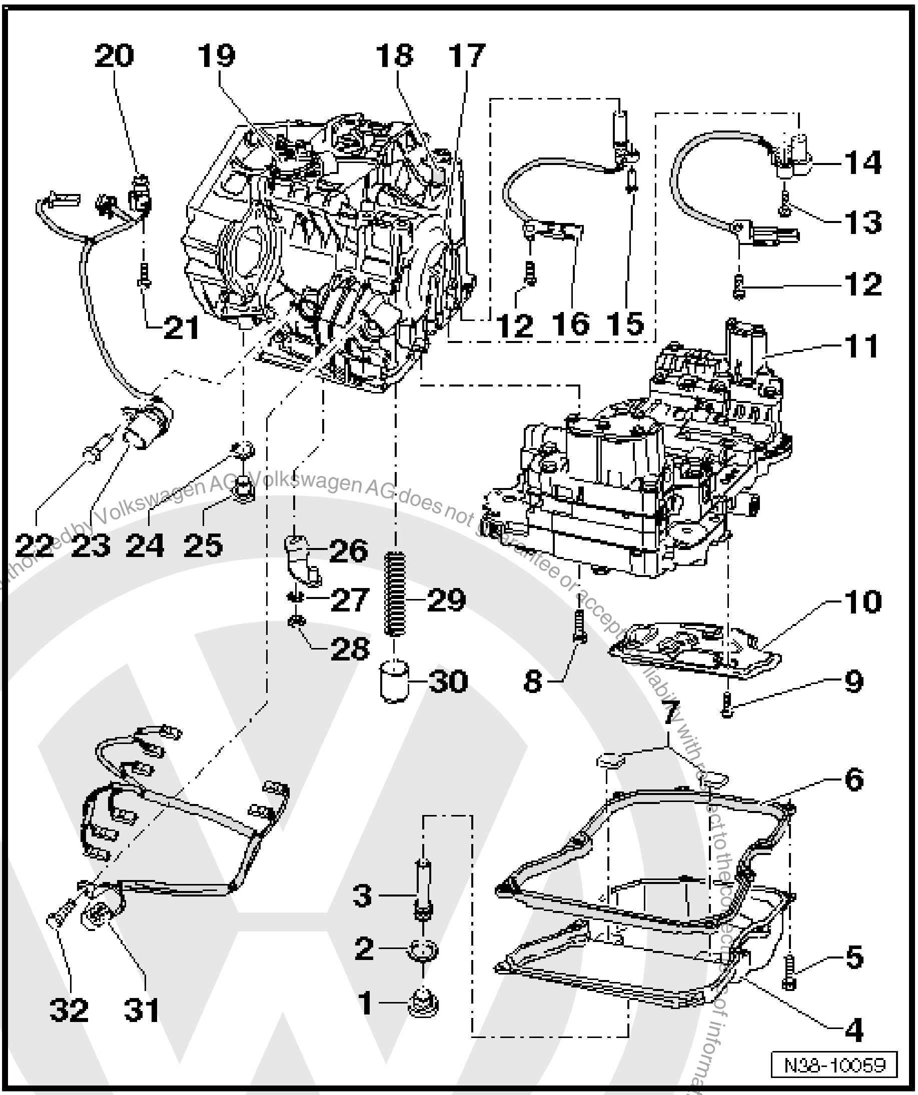
38 – Gears, Hydraulic Controls

1 Description and Operation

⇒ “1.1 Valve Body Overview“, page 100

⇒ “1.2 Wire Routing, Connectors and Bracket on Valve Body“, page 102

1.1 Valve Body Overview



1 - Inspection Plug

- ☐ Transmission fluid level, checking and filling. Refer to ⇒ “1.1 Transmission Fluid Level, Checking and Filling“, page 10 .
- ☐ Tightening specification, refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .

2 - Seal

- ☐ Always replace.

3 - Overflow Tube

- ☐ Remove in order to drain the transmission fluid.
- ☐ Tightening specification, refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .

4 - Transmission Fluid Pan

- ☐ Removing and installing, refer to ⇒ “3.2 Transmission Fluid Pan“, page 106 .

5 - Bolt

- ☐ Tighten the transmission fluid pan bolts diagonally and in several steps.
- ☐ Tightening specification, refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .

6 - Gasket

- ☐ With spacers (quantity: 8).
- ☐ Check before installing.
- ☐ Replace a brittle, cracked or deformed gasket.

7 - Magnet

- ☐ Quantity: 2; in the depressions in the pan.
- ☐ Clean before installing the pan.

8 - Bolt

- ☐ For securing the valve body to the transmission.

- ☐ Quantity 12; with different lengths, refer to ⇒ Fig. ““Bolt Lengths and Locations on the Valve Body““ , page 112 .
- ☐ Always replace the bolts.
- ☐ Tightening specification, refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .

9 - Bolt

- ☐ Quantity: 3
- ☐ For securing the transmission fluid filter to the valve body.
- ☐ Tightening specification, refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .

10 - Transmission Fluid Filter

- ☐ Removing and installing, refer to ⇒ “3.3 Transmission Fluid Filter“, page 108 .

11 - Valve Body

- ☐ Removing and installing, refer to ⇒ “3.4 Valve Body“, page 109 .
- ☐ For the correct allocation, refer to the Parts Catalog.

12 - Bolt

- ☐ Tightening specification, refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .

13 - Bolt

- ☐ Tightening specification, refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .

14 - Transmission Input Speed Sensor -G182-

- ☐ Removing and installing, refer to ⇒ “3.6 Transmission Input Speed Sensor G182“, page 114 .

15 - Bolt

- ☐ Tightening specification, refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .

16 - Transmission Output Speed Sensor -G195-

- ☐ Removing and Installing, refer to ⇒ “3.7 Transmission Output Speed Sensor G195“, page 114 .

17 - Transmission Housing

- ☐ The transmission fluid cooler is not illustrated

18 - Vent Cap

19 - Multifunction Transmission Range Switch -F125-

- ☐ Removing and installing, refer to ⇒ “5.1 Multifunction Transmission Range Switch F125“, page 40 .
- ☐ Adjusting, refer to ⇒ “2.2 Multifunction Transmission Range Switch, Adjusting“, page 15 .

20 - Transmission Fluid Temperature Sensor -G93-

- ☐ Integrated into the wiring harness.
- ☐ Tightening specification, refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .
- ☐ Removing and installing, refer to ⇒ “3.5 Solenoid Valve and Sensor Wiring Harness“, page 113 .
- ☐ Wire routing, refer to ⇒ “1.2 Wire Routing, Connectors and Bracket on Valve Body“, page 102 .

21 - Bolt

- ☐ Tightening specification, refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .

22 - Bolt

- ☐ Tightening specification, refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .

23 - Sensor Wiring Harness

- ☐ With the transmission fluid temperature sensor.
- ☐ For the transmission input speed sensor and the transmission output speed sensor.
- ☐ Always replace the seal on the connector housing.
- ☐ Removing and installing, refer to ⇒ “3.5 Solenoid Valve and Sensor Wiring Harness“, page 113 .
- ☐ Wire routing, refer to ⇒ “1.2 Wire Routing, Connectors and Bracket on Valve Body“, page 102 .
- ☐ For the correct allocation, refer to the Parts Catalog.

24 - Seal

- ☐ Always replace.

25 - Drain Plug

- ☐ Tightening specification, refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .

26 - Selector Shaft Lever

27 - Washer

28 - Nut

- ☐ Installed position: The centering collar faces the washer ⇒ Item 27 (page 102) .
- ☐ Tightening specification, refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .

29 - Spring

- ☐ For the correct allocation, refer to the Parts Catalog.

30 - Piston

31 - Solenoid Valve Wiring Harness

- ☐ Always replace the seal on the connector housing.
- ☐ Removing and installing, refer to ⇒ “3.5 Solenoid Valve and Sensor Wiring Harness“, page 113 .
- ☐ Wire routing, refer to ⇒ “1.2 Wire Routing, Connectors and Bracket on Valve Body“, page 102 .

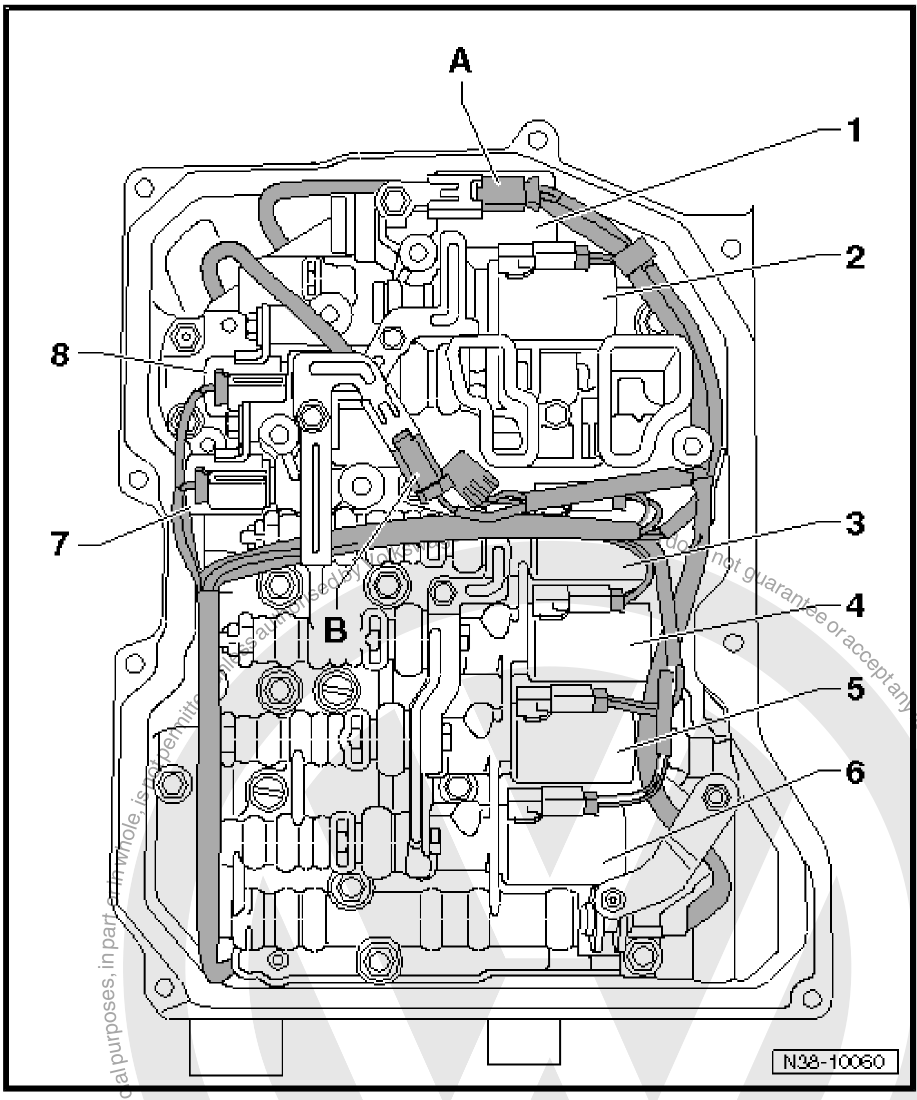
32 - Bolt

- ☐ Tightening specification, refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .

1.2 Wire Routing, Connectors and Bracket on Valve Body

In this chapter the information regarding working on the solenoid valves is shown in illustrations.

Wiring Routing and Connectors



1 - Solenoid Valve 4 -N91-

- ☐ Wiring colors to the valve: green/brown.

2 - Solenoid Valve 6 -N93-

- ☐ Wiring colors to the valve: green/gray.

3 - Solenoid Valve 5 -N92-

- ☐ Wiring colors to the valve: yellow/purple.

4 - Solenoid Valve 9 -N282-

- ☐ Wiring colors to the valve: red/blue

5 - Solenoid Valve 10 -N283-

- ☐ Wiring colors to the valve: white/black.

6 - Solenoid Valve 3 -N90-

- ☐ Wiring colors to the valve: green/blue.

7 - Solenoid Valve 1 -N88-

- ☐ Wiring color to the valve: white.

8 - Solenoid Valve 2 -N89-

- ☐ Wiring color to the valve: black.

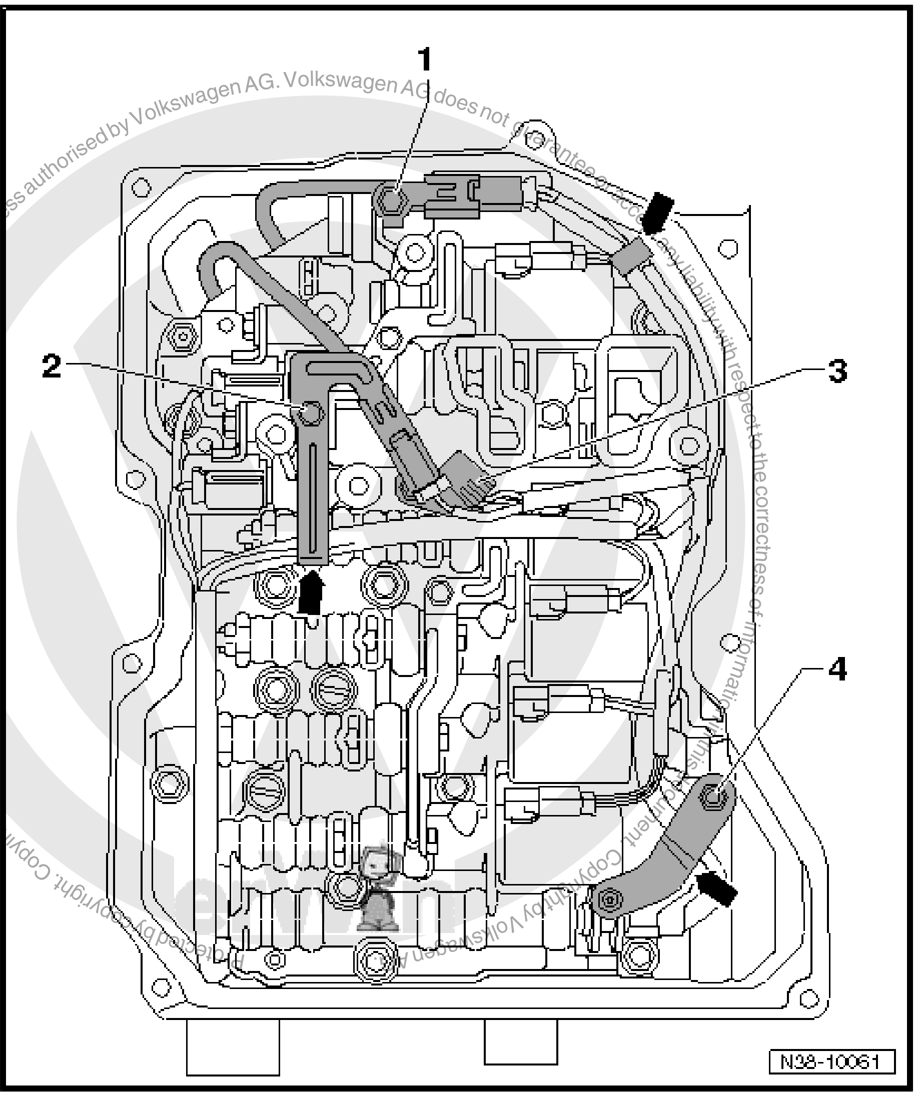
A - Transmission Output Speed Sensor Connector

- ☐ Wiring colors to the sensor: blue/orange.

B - Transmission Input Speed Sensor Connector

- ☐ Wiring colors to the sensor: white/red.

Bracket for Connectors, Securing the Wires



1 - Transmission Output Speed Sensor Connector Bracket

- ❑ Tightening specification, refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .

2 - Transmission Input Speed Sensor Connector Bracket

- ❑ Tightening specification, refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .

3 - Transmission Fluid Temperature Sensor -G93-

- ❑ Wiring color for sensor: orange/orange.

4 - Selector Lever

- ❑ Tightening specification, refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .

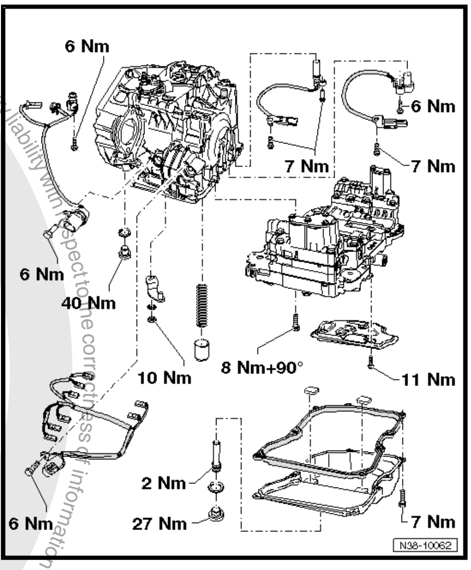
Arrow -

- ❑ The wires are attached here.

2 Specifications

⇒ “2.1 Fastener Tightening Specifications“, page 105

2.1 Fastener Tightening Specifications


6 Nm
6 Nm
7 Nm
7 Nm
6 Nm
40 Nm
10 Nm
8 Nm+90°
11 Nm
2 Nm
6 Nm
27 Nm
7 Nm
N38-10062

3 Removal and Installation

⇒ “3.1 Selector Shaft Seal“, page 106

⇒ “3.2 Transmission Fluid Pan“, page 106

⇒ “3.3 Transmission Fluid Filter“, page 108

⇒ “3.4 Valve Body“, page 109

⇒ “3.5 Solenoid Valve and Sensor Wiring Harness“, page 113

⇒ “3.6 Transmission Input Speed Sensor G182“, page 114

⇒ “3.7 Transmission Output Speed Sensor G195“, page 114

3.1 Selector Shaft Seal

Special tools and workshop equipment required

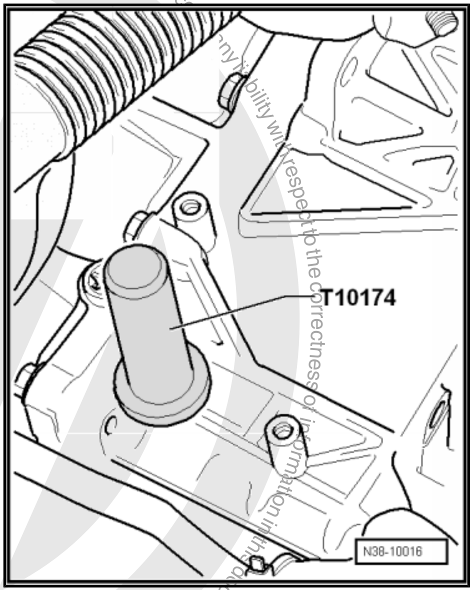
- Thrust Piece -T10174-

Removing

- Remove the multifunction transmission range switch.
- Carefully pry out the selector shaft seal with a screwdriver. Be careful not to damage the selector shaft when doing this.

Installing

- Install the new seal using the thrust piece -T10174- . Do not tilt the seal.
- Adjust the multifunction transmission range switch. Refer to ⇒ “2.2 Multifunction Transmission Range Switch, Adjusting“, page 15 .



3.2 Transmission Fluid Pan

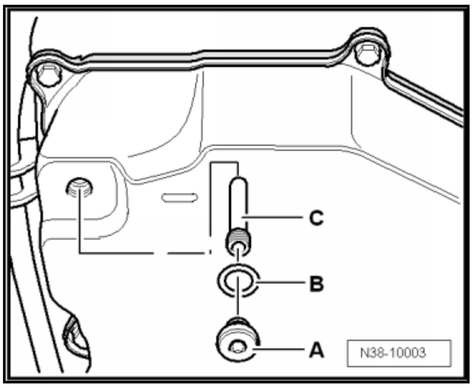
Special tools and workshop equipment required

- Drip Tray -V.A.G 1306-
- Torque Wrench -V.A.G 1783-

Removing

- Remove the noise insulation under the engine .
- Place the drip tray -V.A.G 1306- underneath.
- Remove the plug -A-.

– Remove the overflow tube -C- and drain the transmission fluid.



– Loosen the transmission fluid pan bolts -arrows- diagonally.

– Remove the pan and gasket.

Installing

Install in reverse order of removal. Pay attention to the following:

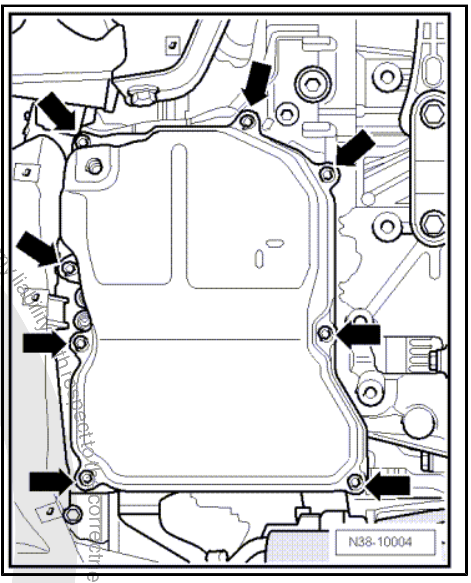
– Clean the two magnets inside the recesses in the pan. Make sure that the magnets are in full contact with the pan.

– Check the gasket for damage and make sure all of the spacers (quantity: 8) are present.

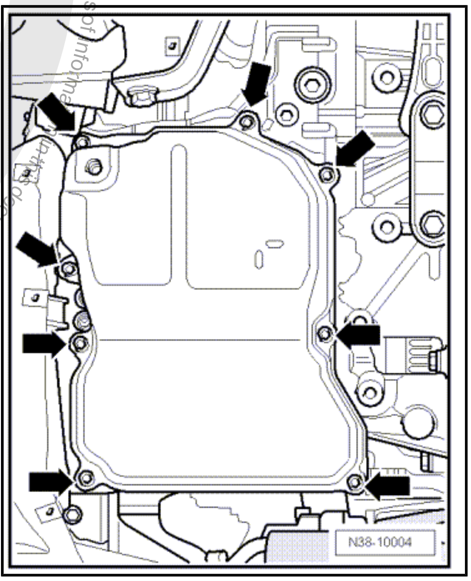
Otherwise, replace the gasket.

– Install the pan and gasket; when doing this be sure not to pinch any wires.

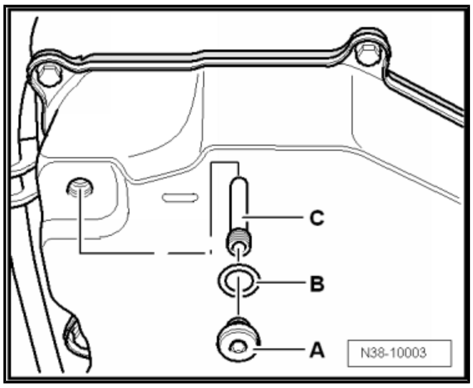
– Make sure the pan gasket fits correctly.



– Tighten the pan bolts -arrows- diagonally and in several steps. Tightening specifications, refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .



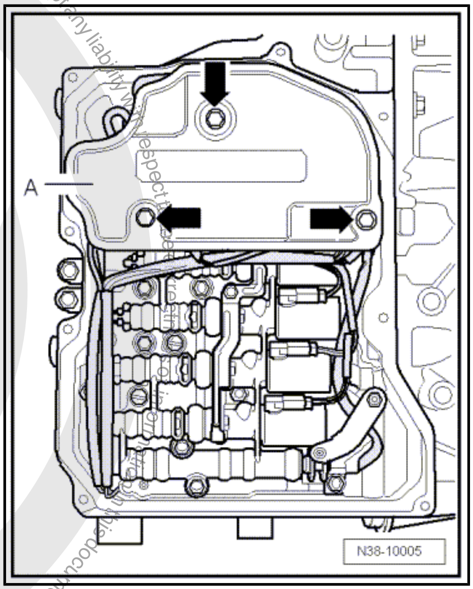
- Install the overflow tube -C-. For the correct tightening specification, refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .
- Fill with transmission fluid and check the level. Refer to ⇒ “1.1 Transmission Fluid Level, Checking and Filling“, page 10 .



3.3 Transmission Fluid Filter

Removing

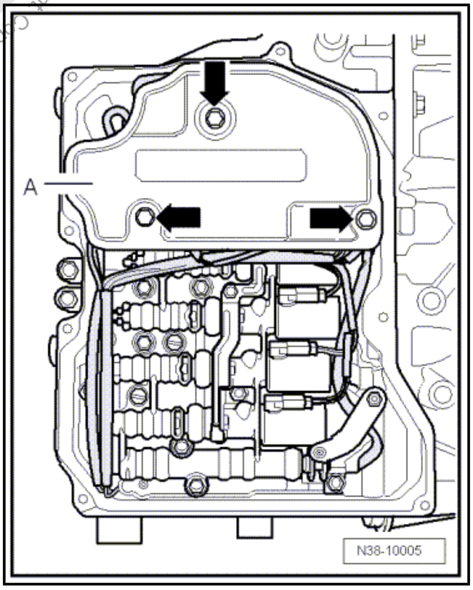
- Remove the transmission fluid pan. Refer to ⇒ “3.2 Transmission Fluid Pan“, page 106 .
- Remove the transmission fluid filter bolts -arrows-.
- Remove the filter -A- from the valve body.



Installing

- Lightly coat the seals on the filter suction collar with transmission fluid.
- Replace the filter if the seals are loose or faulty.

- Install the filter -A- and tighten the bolts. Refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .
- Install the transmission fluid pan. Refer to ⇒ “3.2 Transmission Fluid Pan“, page 106 .
- Fill with fluid and check the level. Refer to ⇒ “1.1 Transmission Fluid Level, Checking and Filling“, page 10 .



3.4 Valve Body

WARNING

Do not run the engine or tow the vehicle when the pan is removed or when there is no transmission fluid in the transmission.

- The valve body and the wiring harnesses can also be removed with the transmission installed.
- Install seals using transmission fluid. Other types of lubricants can lead to faults in the transmission hydraulics.
- Always replace a dirty or faulty valve body.
- Only use lint free cloths
- Check the fluid level after installing the pan. Refer to ⇒ “1.1 Transmission Fluid Level, Checking and Filling“, page 10 .

Special tools and workshop equipment required

- Torque Wrench (5-50 Nm) -V.A.G 1331-
- Digital Torque Wrench -V.A.G 1756-

Removing

– Remove the transmission fluid filter. Refer to ⇒ “3.3 Transmission Fluid Filter“, page 108 .

– Disconnect the connector from the solenoid valves ⇒ Item 1 (page 103) through ⇒ Item 8 (page 103) .

To unlock the connector housing on the solenoid valves, use a flat head screwdriver with a 2.5 mm diameter shaft.

Caution

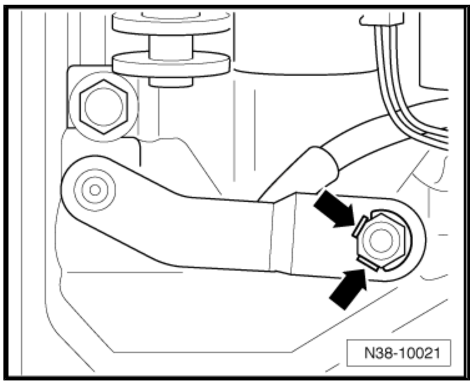
If a connector or the connector housing are damaged, then the wiring harness or solenoid valve must be replaced.

– Disconnect the connectors, see -items A and B- in the ⇒ “1.2 Wire Routing, Connectors and Bracket on Valve Body“, page 102 .

– Remove the brackets (-items 1 and 2- under “Bracket for Connectors, Securing the Wires“ in the ⇒ “1.2 Wire Routing, Connectors and Bracket on Valve Body“, page 102) for the connectors.

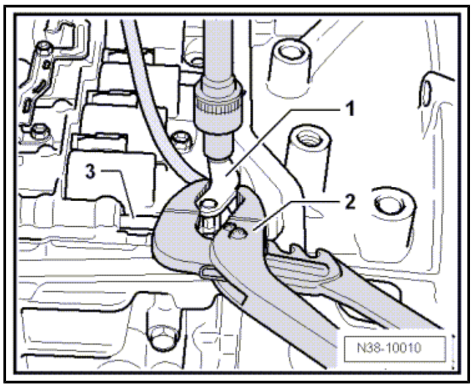
– Disconnect the transmission fluid temperature sensor, see -item 3- under “Bracket for Connectors, Securing the Wires“ in the ⇒ “1.2 Wire Routing, Connectors and Bracket on Valve Body“, page 102 and carefully remove it from the valve body.

– Bend the securing plate -arrows- on the selector lever back.



– Remove the selector lever -1- from the selector shaft.

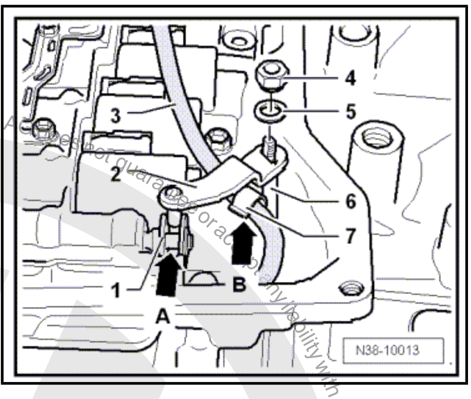
– Hold the selector lever -1- steady with pliers -2- to prevent transferring the torque onto the multifunction transmission range switch.



– Make sure the valve -A- on the valve body is not damaged.

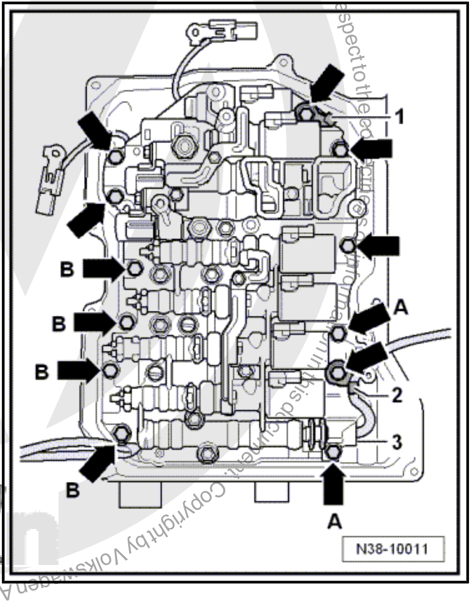
The valve is very “sensitive“. Even minor damage can lead to a malfunction.

– Always slide the valve into the body, secure it against falling out and never exchange it.



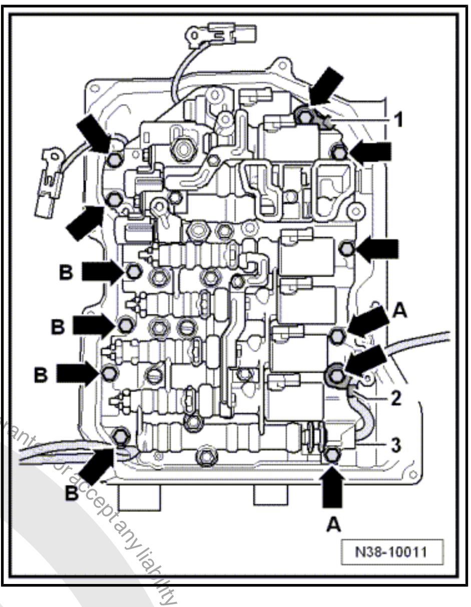
– Loosen the bolts -arrows- (quantity 12).

> **Caution**
>
> *If other bolts are loosened, the valve body will distort.*



– Remove the brackets -1 and 2-.

– Disconnect the valve body and remove it.

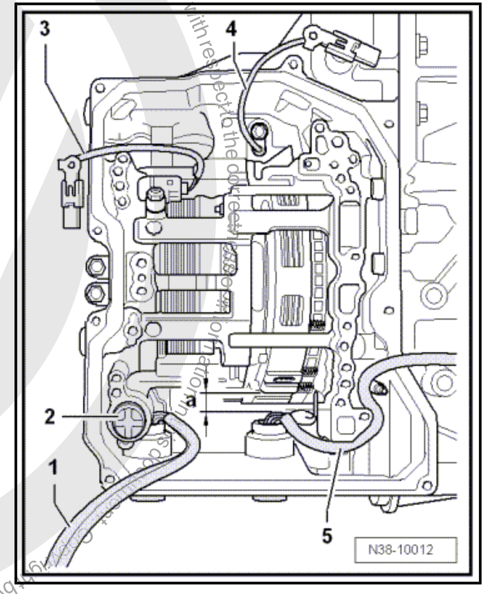


– When removing the valve body, pay attention to the piston -2-.

– Remove the piston with the spring.

Installing

To make sure that the wires do not get pinched during installation:

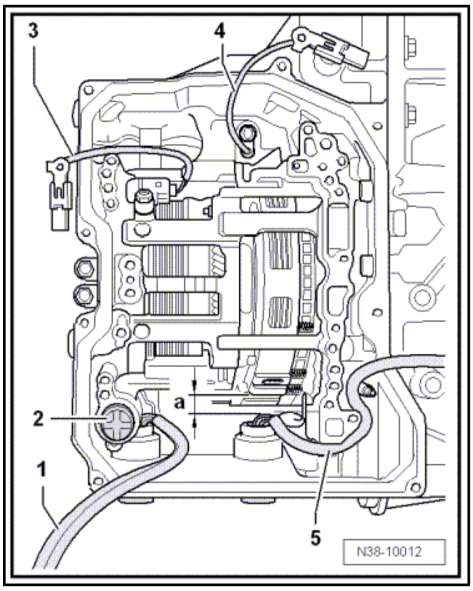


– Route and secure the wires -1, 3, 4 and 5- as illustrated.

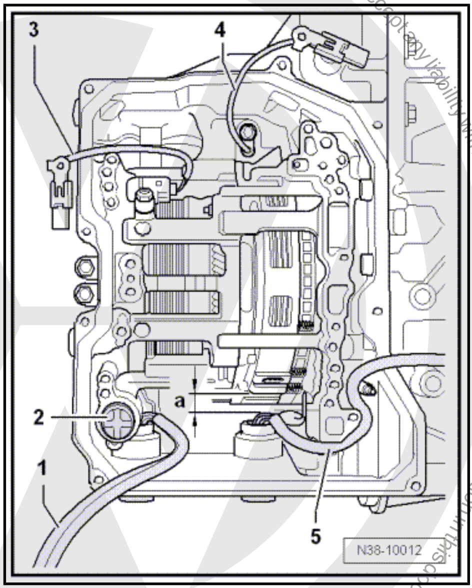
The distance -a- must be maintained so that the wiring harness -5- does not touch the planetary gear and get damaged when the vehicle is being driven.

The valve body is secured with bolts with three different lengths.

– Sort the bolts according to length before installing the valve body.



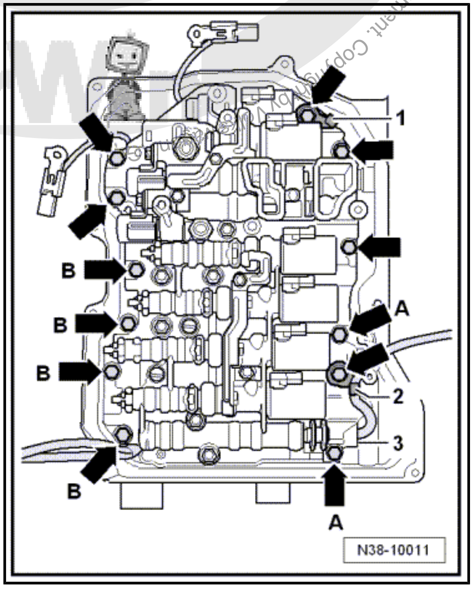
- Coat the piston -2- with transmission fluid and install the spring.
- Install the valve body carefully and secure it using 2 bolts.

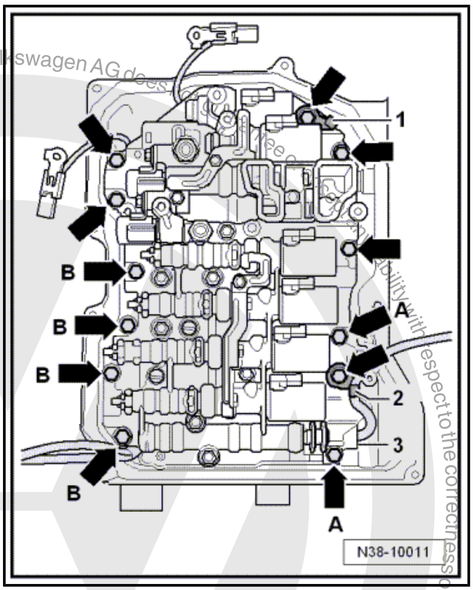


Bolt Lengths and Locations on the Valve Body

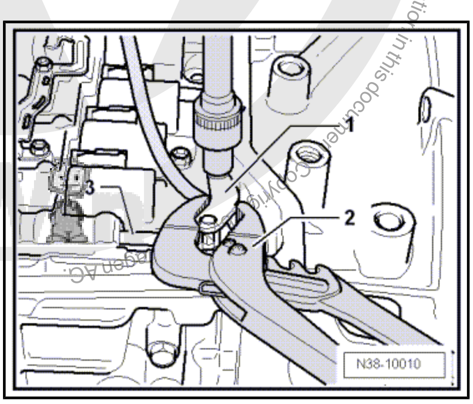
Bolts -arrows-	Quantity 6, M6 x 21
Bolts -arrows A-	Quantity 2, M6 x 16
Bolts -arrows B-	Quantity 4, M6 x 28

- Make sure the wires are not pinched.

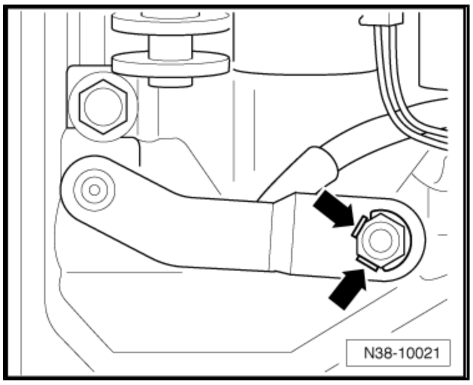




- Install the remaining bolts and the brackets -1 and 2- and tighten by hand.
- Install the transmission fluid temperature sensor and tighten to specification. Refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .
- Connect the connectors (quantity 8) to the solenoid valves. Refer to ⇒ “1.2 Wire Routing, Connectors and Bracket on Valve Body“, page 102 .
- Connect the bracket for the connectors ⇒ “1.2 Wire Routing, Connectors and Bracket on Valve Body“, page 102 , tightening specifications, refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .
- Connect the connectors see -items A and B- in the ⇒ “1.2 Wire Routing, Connectors and Bracket on Valve Body“, page 102 .
- Tighten the valve body bolts working from the inside toward the outside diagonally. Tightening specification, refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .
- Install the selector lever.



- Tighten the nut on the selector lever -1-. For the correct tightening specification refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .
- Hold the selector lever -1- steady with pliers -2- to prevent transferring the torque onto the multifunction transmission range switch.



- Bend the securing plate -arrows- on the nut up.
- Install the transmission fluid filter. Refer to ⇒ “3.3 Transmission Fluid Filter“, page 108 .
- Fill the transmission fluid and check the level. Refer to ⇒ “1.1 Transmission Fluid Level, Checking and Filling“, page 10 .
- Connect the vehicle diagnostic tester and move through the selections until “Functions-/component selection“ is displayed.
- Press “Drive (Repair Groups 01;10 through .26; 28 through . 39)“.
- After that “6-speed automatic transmission 09G“.
- Press “01 - OBD“.
- Press “Functions“.
- Press “basic setting“.

3.5 Solenoid Valve and Sensor Wiring Harness

Removing

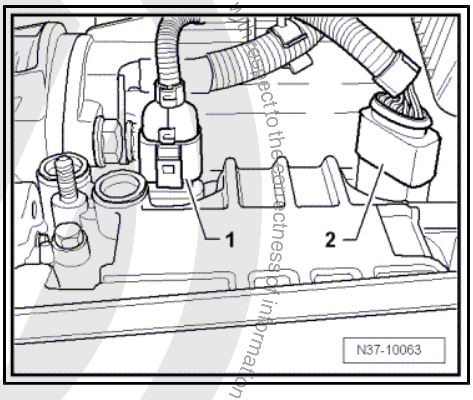
- Drain the transmission fluid. Refer to ⇒ “1.2 Transmission Fluid, Draining and Filling“, page 12 .

– Remove the valve body. Refer to ⇒ “3.4 Valve Body“, page 109 .

– Disconnect the connectors from the transmission:

-1- transmission sensor terminal

-2- connector for solenoid valves



– Disconnect the connector housings from the transmission.

– Disconnect the connector housing together with the wiring harness outward from the transmission housing.

Installing

– Replace the seals on the connector housings.

– Carefully guide the wiring harness from the outside into the transmission.

– Coat the connector housing seals with transmission fluid and then press the connector housing all the way into the transmission.

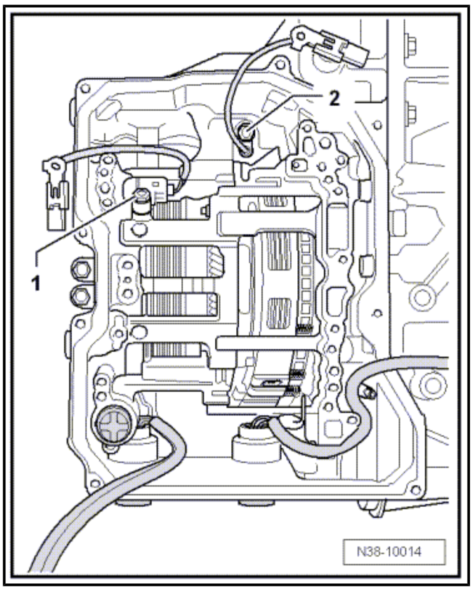
– Connect the connector housing, tightening specification, refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .

– Install the valve body. Refer to ⇒ “3.4 Valve Body“, page 109 .

3.6 Transmission Input Speed Sensor G182

Removing

– Remove the valve body. Refer to ⇒ “3.4 Valve Body“, page 109 .



– Remove the transmission input speed sensor bolt -1-.

– Remove the transmission input speed sensor from the transmission.

Installing

Install in reverse order of removal. Pay attention to the following:

– Press the sensor all the way into the transmission.

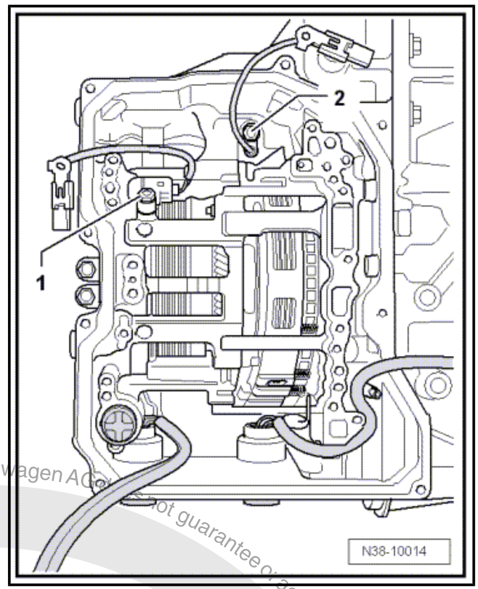
– Install the transmission input speed sensor bolt -1-. Tightening specification, refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .

– Install the valve body. Refer to ⇒ “3.4 Valve Body“, page 109 .

3.7 Transmission Output Speed Sensor G195

Removing

– Remove the valve body. Refer to ⇒ “3.4 Valve Body“, page 109 .



- Remove the transmission output speed sensor bolt -2-.
- Remove the transmission output speed sensor from the transmission.

Installing

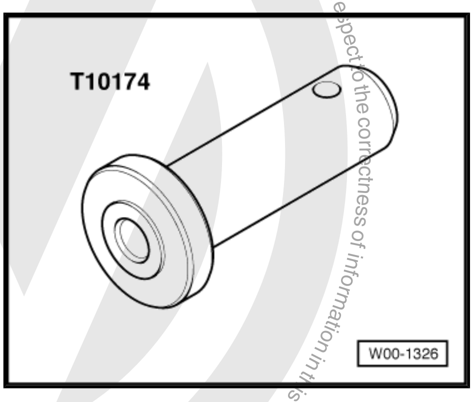
Install in reverse order of removal. Pay attention to the following:

- Press the sensor all the way into the transmission.
- Install the transmission output speed sensor bolt -2-. Tightening specification, refer to ⇒ “2.1 Fastener Tightening Specifications“, page 105 .
- Install the valve body. Refer to ⇒ “3.4 Valve Body“, page 109 .

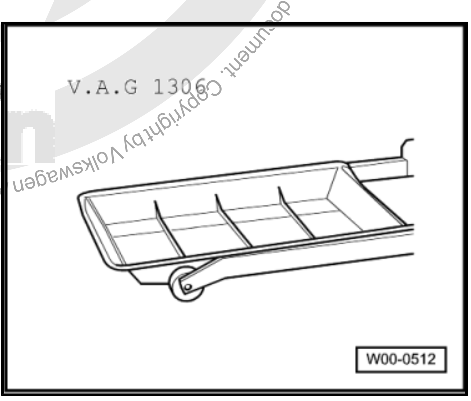
4 Special Tools

Special tools and workshop equipment required

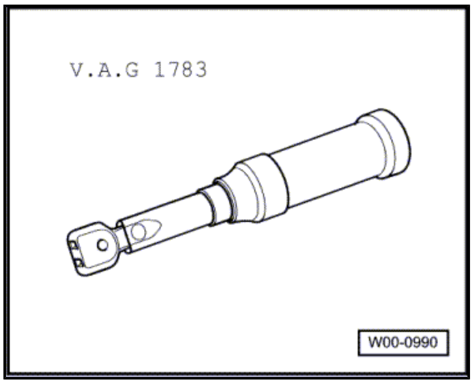
- ♦ Thrust Piece -T10174-


T10174
W00-1326

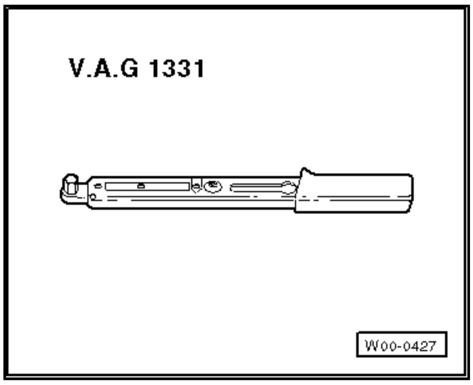
- ♦ Drip Tray -V.A.G 1306-


V.A.G 1306
W00-0512

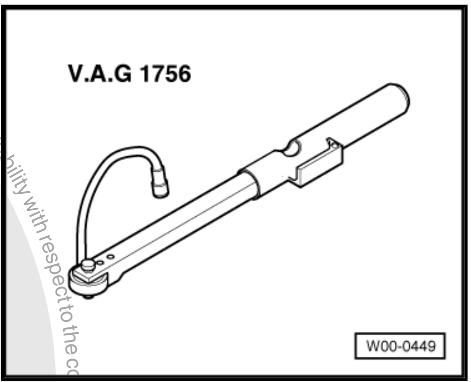
- ♦ Torque Wrench -V.A.G 1783-


V.A.G 1783
W00-0990

- ♦ Torque Wrench (5-50 Nm) -V.A.G 1331-


V.A.G 1331
W00-0427

- Digital Torque Wrench -V.A.G 1756-


V.A.G 1756
W00-0449

39 – Final Drive, Differential

1 Removal and Installation

⇒ “1.1 Left Flange Shaft Seal“, page 118

⇒ “1.2 Right Flange Shaft Seal“, page 119

1.1 Left Flange Shaft Seal

Short Description

The seal for the flange shaft can be changed with the transmission installed.

The drive axle is completely removed.

Special tools and workshop equipment required

♦ Puller -T10055-

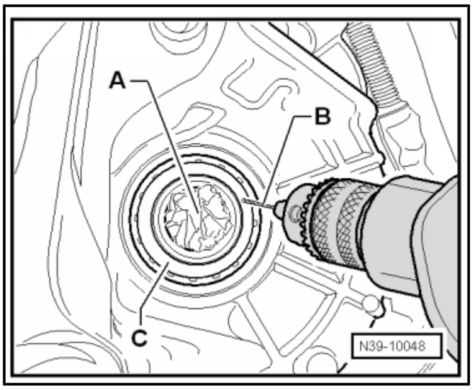
♦ Thrust Piece -T10176-

Removing

– Remove the left drive axle. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40 ; Removal and Installation .

– Seal off the drive axle opening in the transmission with a clean cloth -A-.

– Carefully drill a hole, 2 to 4 mm in diameter -B- into the outer metal ring -C- in the seal.

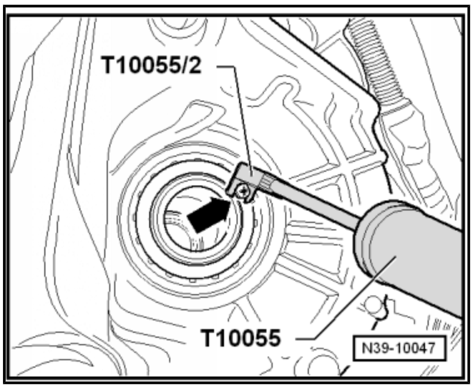


Note

♦ *Grease the drill bit -B- so that the shavings stick to the drill bit.*

♦ *Drill only through the metal ring -C- otherwise the transmission will get damaged.*

– Install a 4 mm screw into the drilled hole in the seal -arrow-.



Note

- *Be careful not to install the screw too deep otherwise the bearing underneath will get damaged.*
- *Remove the seal using the puller -T10055- and adapter -T10055/2-*
- *Remove the cloth and carefully clean the transmission and the opening for the drive axle.*
- *Metal shavings must not get into the transmission or into the opening for the drive axle; vacuum up any shavings if necessary.*
- *If only the metal ring of the seal could be removed, carefully pry out the remaining parts of the seal using screwdriver.*

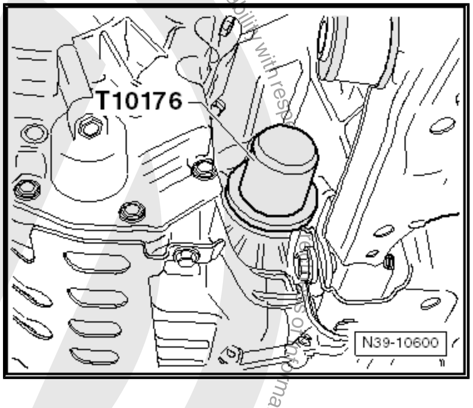
Installing

Install in the reverse order of removal. Pay attention to the following:

– Coat the outer circumference and sealing lips of the new seal with transmission fluid.

Installed position:

The open side of the seal faces the transmission.



– Install the new seal all the way using the thrust piece -T10176- . Do not tilt the seal.

– Install the drive axle. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40 ; Removal and Installation .

– Check the transmission fluid level and add if necessary. Refer to ⇒ “1.1 Transmission Fluid Level, Checking and Filling“, page 10 .

– Install the noise insulation.

1.2 Right Flange Shaft Seal

Short Description

The seals for the flange shafts can be changed with transmission installed.

The drive axle remains in the vehicle and is only removed from the transmission.

– The drive axle remains in the wheel bearing.

Special tools and workshop equipment required

- Puller -T10055-
- Thrust Piece -T10177-

Removing

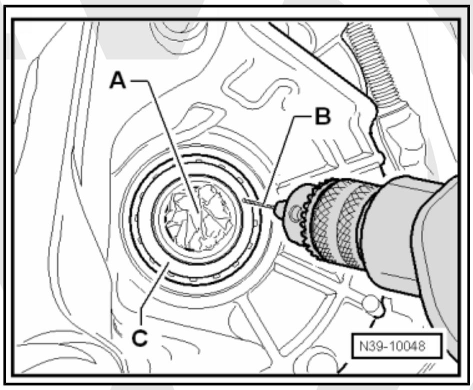
– Remove the noise insulation.

– Remove the right drive axle from the transmission. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40 ; Removal and Installation .

– Tie the drive axle as high up as possible. Be careful not to damage the paint on the drive axle.

– Seal off the drive axle opening in the transmission with a clean cloth -A-.

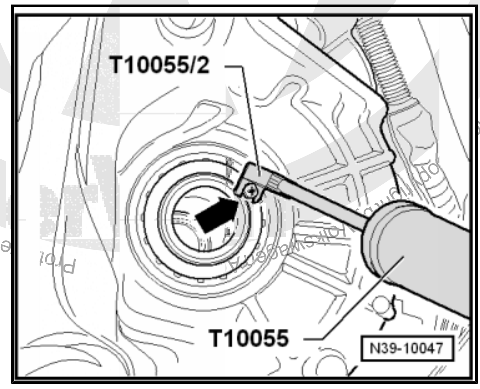
– Carefully drill a hole, 2 to 4 mm in diameter -B- into the outer metal ring -C- in the seal.



Note

- ♦ *Grease the drill bit -B- so that the shavings stick to the drill bit.*
- ♦ *Drill only through the metal ring -C- otherwise the transmission will get damaged.*

– Install a 4 mm screw into the drilled hole in the seal -arrow-.



Note

- ♦ *Be careful not to install the screw too deep otherwise the bearing underneath will get damaged.*
- ♦ *Remove the seal with the puller -T10055- and adapter -T10055/2-*
- ♦ *Remove the cloth and carefully clean the transmission and the opening for the drive axle.*
- ♦ *Metal shavings must not get into the transmission or into the opening for the drive axle; vacuum up any shavings if necessary.*
- ♦ *If only the metal ring of the seal could be removed, carefully pry out the remaining seal using a screwdriver.*

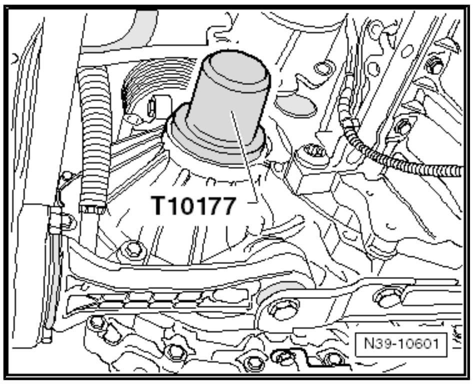
Installing

Install in the reverse order of removal. Pay attention to the following:

– Coat the outer circumference and sealing lips of new seal with transmission fluid.

Installed position:

The open side of the seal faces the transmission.



– Install the new seal all the way using the thrust piece -T10177- . Do not tilt the seal.

– Install the drive axle. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40 ; Removal and Installation .

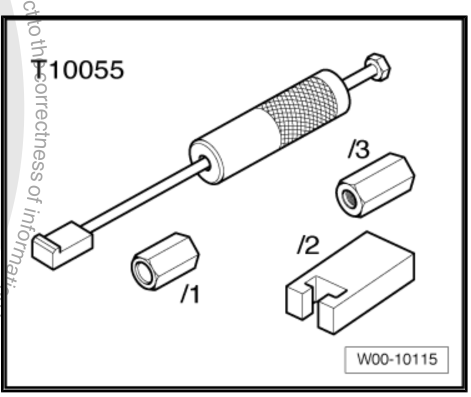
– Check the transmission fluid level and add if necessary. Refer to ⇒ “1.1 Transmission Fluid Level, Checking and Filling“, page 10 .

– Install the noise insulation.

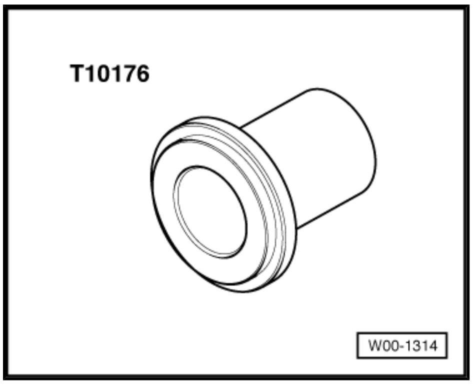
2 Special Tools

Special tools and workshop equipment required

- Thrust Piece -T10177-
- Puller -T10055-


T10055
/1
/2
/3
W00-10115

- Thrust Piece -T10176-


T10176
W00-1314

Edition 07.12.2012

Cautions & Warnings

Please read these WARNINGS and CAUTIONS before proceeding with maintenance and repair work. You must answer that you have read and you understand these WARNINGS and CAUTIONS before you will be allowed to view this information.

- If you lack the skills, tools and equipment, or a suitable workshop for any procedure described in this manual, we suggest you leave such repairs to an authorized Volkswagen retailer or other qualified shop. We especially urge you to consult an authorized Volkswagen retailer before beginning repairs on any vehicle that may still be covered wholly or in part by any of the extensive warranties issued by Volkswagen.

- Disconnect the battery negative terminal (ground strap) whenever you work on the fuel system or the electrical system. Do not smoke or work near heaters or other fire hazards. Keep an approved fire extinguisher handy.

- Volkswagen is constantly improving its vehicles and sometimes these changes, both in parts and specifications, are made applicable to earlier models. Therefore, part numbers listed in this manual are for reference only. Always check with your authorized Volkswagen retailer parts department for the latest information.

- Any time the battery has been disconnected on an automatic transmission vehicle, it will be necessary to reestablish Transmission Control Module (TCM) basic settings using the VAG 1551 Scan Tool (ST).

- Never work under a lifted vehicle unless it is solidly supported on stands designed for the purpose. Do not support a vehicle on cinder blocks, hollow tiles or other props that may crumble under continuous load. Never work under a vehicle that is supported solely by a jack. Never work under the vehicle while the engine is running.

- For vehicles equipped with an anti-theft radio, be sure of the correct radio activation code before disconnecting the battery or removing the radio. If the wrong code is entered when the power is restored, the radio may lock up and become inoperable, even if the correct code is used in a later attempt.

- If you are going to work under a vehicle on the ground, make sure that the ground is level. Block the wheels to keep the vehicle from rolling. Disconnect the battery negative terminal (ground strap) to prevent others from starting the vehicle while you are under it.

- Do not attempt to work on your vehicle if you do not feel well. You increase the danger of injury to yourself and others if you are tired, upset or have taken medicine or any other substances that may impair you or keep you from being fully alert.

- Never run the engine unless the work area is well ventilated. Carbon monoxide (CO) kills.

- Always observe good workshop practices. Wear goggles when you operate machine tools or work with acid. Wear goggles, gloves and other protective clothing whenever the job requires working with harmful substances.

- Tie long hair behind your head. Do not wear a necktie, a scarf, loose clothing, or a necklace when you work near machine tools or running engines. If your hair, clothing, or jewelry were to get caught in the machinery, severe injury could result.

- Do not re-use any fasteners that are worn or deformed in normal use. Some fasteners are designed to be used only once and are unreliable and may fail if used a second time. This includes, but is not limited to, nuts, bolts, washers, circlips and cotter pins. Always follow the recommendations in this manual - replace these fasteners with new parts where indicated, and any other time it is deemed necessary by inspection.

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Cautions & Warnings

- Illuminate the work area adequately but safely. Use a portable safety light for working inside or under the vehicle. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.

- Friction materials such as brake pads and clutch discs may contain asbestos fibers. Do not create dust by grinding, sanding, or by cleaning with compressed air. Avoid breathing asbestos fibers and asbestos dust. Breathing asbestos can cause serious diseases such as asbestosis or cancer, and may result in death.

- Finger rings should be removed so that they cannot cause electrical shorts, get caught in running machinery, or be crushed by heavy parts.

- Before starting a job, make certain that you have all the necessary tools and parts on hand. Read all the instructions thoroughly; do not attempt shortcuts. Use tools that are appropriate to the work and use only replacement parts meeting Volkswagen specifications. Makeshift tools, parts and procedures will not make good repairs.

- Catch draining fuel, oil or brake fluid in suitable containers. Do not use empty food or beverage containers that might mislead someone into drinking from them. Store flammable fluids away from fire hazards. Wipe up spills at once, but do not store the oily rags, which can ignite and burn spontaneously.

- Use pneumatic and electric tools only to loosen threaded parts and fasteners. Never use these tools to tighten fasteners, especially on light alloy parts. Always use a torque wrench to tighten fasteners to the tightening torque listed.

- Keep sparks, lighted matches, and open flame away from the top of the battery. If escaping hydrogen gas is ignited, it will ignite gas trapped in the cells and cause the battery to explode.

- Be mindful of the environment and ecology. Before you drain the crankcase, find out the proper way to dispose of the oil. Do not pour oil onto the ground, down a drain, or into a stream, pond, or lake. Consult local ordinances that govern the disposal of wastes.

- The air-conditioning (A/C) system is filled with a chemical refrigerant that is hazardous. The A/C system should be serviced only by trained automotive service technicians using approved refrigerant recovery/recycling equipment, trained in related safety precautions, and familiar with regulations governing the discharging and disposal of automotive chemical refrigerants.

- Before doing any electrical welding on vehicles equipped with anti-lock brakes (ABS), disconnect the battery negative terminal (ground strap) and the ABS control module connector.

- Do not expose any part of the A/C system to high temperatures such as open flame. Excessive heat will increase system pressure and may cause the system to burst.

- When boost-charging the battery, first remove the fuses for the Engine Control Module (ECM), the Transmission Control Module (TCM), the ABS control module, and the trip computer. In cases where one or more of these components is not separately fused, disconnect the control module connector(s).

- Some of the vehicles covered by this manual are equipped with a supplemental restraint system (SRS), that automatically deploys an airbag in the event of a frontal impact. The airbag is operated by an explosive device. Handled improperly or without adequate safeguards, it can be accidentally activated and cause serious personal injury. To guard against personal injury or airbag system failure, only trained Volkswagen Service technicians should test, disassemble or service the airbag system.

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Cautions & Warnings

- Do not quick-charge the battery (for boost starting) for longer than one minute, and do not exceed 16.5 volts at the battery with the boosting cables attached. Wait at least one minute before boosting the battery a second time.

- Never use a test light to conduct electrical tests of the airbag system. The system must only be tested by trained Volkswagen Service technicians using the VAG 1551 Scan Tool (ST) or an approved equivalent. The airbag unit must never be electrically tested while it is not installed in the vehicle.

- Some aerosol tire inflators are highly flammable. Be extremely cautious when repairing a tire that may have been inflated using an aerosol tire inflator. Keep sparks, open flame or other sources of ignition away from the tire repair area. Inflate and deflate the tire at least four times before breaking the bead from the rim. Completely remove the tire from the rim before attempting any repair.

- When driving or riding in an airbag-equipped vehicle, never hold test equipment in your hands or lap while the vehicle is in motion. Objects between you and the airbag can increase the risk of injury in an accident.

I have read and I understand these Cautions and Warnings.

back **OK**

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